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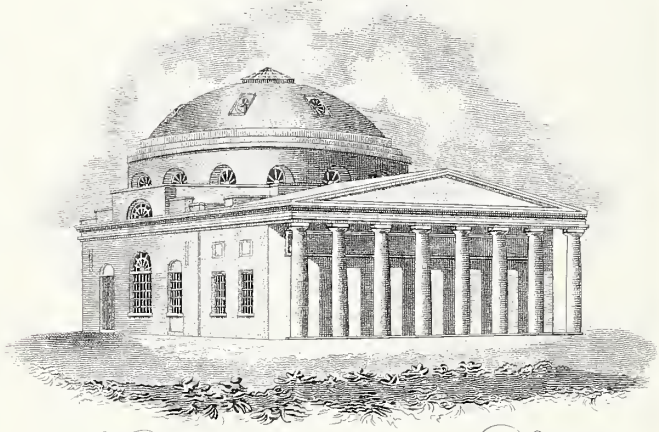

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THE TREATMENT OF PROLAPSE OF THE UTERUS IN ELDERLY WOMEN.*

By CHAS. R. ROBINS, M. D., Richmond, Va.

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Prolapse of the uterus is always an interesting subject. Its chief etiology arises from traumatisms of various types incident to childbirth. The repair of these and the adjustment of the organs concerned require the nicest gynecological judgment and technique.

There are three principal factors concerned in the retention of the uterus at this normal level. First, the anteverted position of the uterus by which the intra-abdominal pressure is received on the posterior surface of the uterus, thereby pushing the uterus forward instead of downward. Second, the normal perineum, which effectually closes the vaginal orifice, making of the pelvis a closed cavity. As long as the pelvis is properly closed in this manner, practically no pressure is exerted on the contained viscera, the pressure being received on the walls and floor of the pelvis. If the function of the perineum has been destroyed by injury and the vagina is patulous, the vagina and the uterus become in a way a part of the floor and receive the intra-abdominal pressure, which forces the uterus and vagina downward. Third, the ligaments of the uterus, which, as a rule, have more to do with keeping the uterus in normal position of anteversion than with giving support. The exception to this is found in the structures at the base of the broad ligaments which are called the cardinal ligaments, and which do actually give support. There are, of course, other conditions which may cause prolapse of the uterus, such as tumors, ascites, etc., but these may be termed extraneous causes and are not concerned with the type which we have under discussion. There is one other condition, however, which I have found quite frequently the etiological factor of prolapse, and this is the congenitally elongated cervix. I have seen such cervices that extended the full length of the vagina when the uterus was in its normal position. Such cervices, by keeping the uterus in the axis of the vagina instead of at right angles to it, put the uterus in a position for receiving intra-abdominal pressure in such a way as to force it down through the vagina. After this condition has existed for some years, the ligaments finally become stretched and we have a true prolapse. In this way we may have a prolapse of marked degree in a woman who has never borne children. Amputation of the cervix when it first begins to present is frequently all that is necessary.

Prolapse occurring in women during the child-bearing age calls for such operations as will as nearly as possible restore normal conditions. The success of these procedures depends to a large extent on the technical skill of the operator. The main features consist of the suspension of the uterus, for which the Olshausen operation is probably the best type, the cure of the cystocele for which I have found Graves operation usually the most satisfactory, and the reconstruction of the perineum which I usually do after a method described in a paper read before the meeting of the State Society in 1924. In addition, the shortening of the utero-sacro ligaments is theoretically a valuable procedure. As a matter of practical experience, however, I so frequently find these ligaments attenuated and often even difficult to demonstrate, that I do not believe that we can place much dependence on their functional restoration.

The type of prolapse which we have for discussion today, however, presents factors in addition to those already enumerated. In such women we usually have the history of a preceding more or less mild form of prolapse or of lacerations, which in the last year or two have become suddenly very much more pro-

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

nounced, so that the uterus is extruded from the vagina when the patient is in the standing position and the bladder usually presents itself as a globular cystocele, often extending lower than the cervix. The explanation of the sudden increase in the extent of the prolapse lies in the atrophic changes in muscles and fascia found at this time of life. In addition to other changes, the abdomen becomes relaxed and presents the shape quite literally described as pot-bellied. Accompanying this is a relaxation of the mesenteric attachments, permitting of a ptosis of all of the abdominal organs. In addition to the effect of the atrophy of the ligaments and muscles in the pelvis, we have the increased abdominal pressure from the abdominal ptosis. For the relief of such cases of prolapse with cystocele, an operation was devised by Wertheim which was subsequently improved and perfected by Watkins of Chicago and is known as the Interposition Operation. This consists of interposing the uterus between the base of the bladder and the vagina. It is a very useful operation for such cases and enjoys quite a vogue. In order to secure uniformly good results, however, it is necessary to limit this operation to certain rather distinct types. It must be reserved for those cases in which the cardinal ligaments still preserve their supporting power. Those ligaments are the axis on which the uterus is turned and, if relaxation is too great, the uterus will continue to descend although in the anteverted position. It may not actually extrude but will present through the orifice of the vagina and be attended by a number of disagreeable symptoms.

In order to determine the degree of prolapse, it is necessary to place the patient in the position in which it is most apparent, and this is in the standing position. Most cases reduce themselves when the patient lies down, so that an examination made when the patient is in the dorsal position may be quite misleading. When the patient is standing and the everted fornix of the vagina extends as far as the vaginal orifice, I have found that the interposition operation is likely to be unsatisfactory. This is also true when the size of the uterus has been too much diminished by post-climacteric atrophy. What then is to be done in these exaggerated cases? The changes are too far advanced to hope for any great amount of support from the normal supporting tissue. It becomes necessary to secure some fixed support other than exists normally, which may be depended upon to suspend the pelvic contents. It was formerly thought that a ventral suspension or fixation would provide such a support. Actual experience, however, showed that it was perfectly possible in these relaxed cases for the fundus to be firmly fixed to the abdominal wall and for the cervix to be protruding from the vulva.

The operation which I have found useful in these exaggerated cases is a modification of the one suggested by the late John B. Murphy, and is termed "Implantation of the Uterus in the Abdominal Wall." After performing an anterior colporrhaphy and perineorrhaphy, the uterus is delivered through an anterior abdominal incision and the fundus resected by a v-shaped excision, removing with it the entire cavity of the uterus. The thin lateral portions of the uterus are sutured to the under surface of the rectus fascia on either side. This procedure elevates the cervix to the anterior abdominal wall, and it brings with it the cardinal ligaments and all of the structures that are attached to them, so that it does produce an absolutely fixed point and prolapse is impossible. I know of no other operation that so certainly cures prolapse and it seems to me that the patients feel better, have less of the bearing-down sensation and more bodily strength than with any other type of operation for prolapse. It is not intended to supplant the interposition operation but is for those cases in which interposition is inadequate.

Stuart Circle Hospital.

THE UTERINE CERVIX.*

By R. L. RAIFORD, M. D., Franklin, Va.

Since the lymphatics of the uterus ascend in a network, beginning with the cervix and, enveloping the entire body, pass on through the broad ligaments around the tubes and ovaries upward to empty into the thoracic duct, we may conclude that the cervix, by virtue of its semi-exposed position, is the port of entrance for a very large per cent of disease-forming bacteria that invade the female pelvic area. If this inference be true, we may further conclude that the treatment of any pathologic condition in a woman's pelvis, to be most successful, must include the eradication of the orginal focus in the cervix.

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

Anatomically, the cervical canal is lined with a compound racemose glandular type of tissue which has been called the tonsil of the cervix and, like the tonsils, when once infected practically never returns to normal again. From childhood to old age there is a continuous fight in this location for the preservation of health of the female pelvic organs and happy is the woman whose resistance is sufficient to prevent the inroads of serious pathology beyond this point.

We will not attempt to discuss the origin of infection in this glandular tissue of the cervical canal but many good men are coming to believe that endocervicitis, when once well established, is of such grave importance that it is probably responsible for more chronic invalidism, more economic and financial loss, and more nervous and mental symptoms than any other gynecological condition.

Diseased tubes and ovaries with all their accompanying and attendant symptoms and complications practically always have their beginning in an original focus in the cervix. So convinced are we becoming of this fact that, whenever a woman comes to the operating table for major surgery of the pelvic organs, we can feel justified in assuming, at least in a large percentage of such cases, that there was a time in this individual's life when the starting point of the now grave disease condition was confined to the cervix. Had proper treatment been instituted before its normal defenses were broken down, it would probably never have gone further.

From early life when the young girl begins to suffer from so-called chlorosis, has painful periods, becomes nervous and irritable and does not eat well or develop in weight or strength, to the old grandmother who is dying the miserable death of a uterine cancer, this is unquestionably the most critical area of the female system and should always have the most careful consideration and attention.

Many a time, without a careful examination, we thoughtlessly pass by a condition that is serious in the making with the professional assurance to the patient that it is only "some menstrual disorder". Especially is this true of that period of life covering the menopause. I often think that if there have been more ills charged to "teething" than to the "change of life" it is perhaps only because there are more babies than adult women in the world. Let us, for all time, get the fact indelibly fixed in our minds that in the normal woman the menopause is a normal process and that abnormal symptoms at this time are caused by some diseased condition that should have our most careful consideration. We must learn, for once and all, to distinguish between mere symptoms and real disease entities, for only on such knowledge can we base a rational treatment for any type of human ill.

If then we are to assume that the diseased cervix plays so important a part in gynecological diseases, we must, of course, know how to recognize this condition in its early stages. While the gross picture of endocervicitis varies in intensity, in most cases it is typical and easily recognized. The vaginal aspect of the cervix appears swollen and red or bluish red, is often pouty at the outlet of the canal and, where there has been a laceration, usually everted. The once normal columnar epithelium of the canal often pushes itself out giving an appearance of an erosion though it is in reality only a proliferation of the lymphoid tissue of the endocervix. This so-called erosion varies in size from a tiny spot in young girls, to an area larger than a silver dollar in many multiparae. In other cases there is no appearance of erosion at all but a thick tenacious plug of mucus may be seen projecting from a highly irritated canal which bleeds easily on the introduction of a sound and, just as in tonsils, the type of infection rather than the gross appearance of the cervix determines the systemic symptoms that may occur.

The hyperplasia and over-sensitiveness resulting from the long continued low grade infection plays an important part in the discomforts of menstruation and the various pains in the back and pelvic area and in the numerous abnormalities attendant on the menopause.

No examination of a woman is complete without a vaginal examination and no vaginal examination is complete without inspection with the speculum. By this means we can detect early pathology of the cervix and be in a position to institute suitable treatment. If you have been in the habit of letting certain cases go by with only a digital examination, you will be surprised at what pathology you have missed when you begin making inspections as a routine. In this connection, it may be said that inspection is often even more important in girls or women who have never been pregnant and who are having symptoms referable to this area than in those who have borne

children, for in these cases digital examination often tells you very little even where there is pathology of a serious nature.

It has been repeatedly urged that the time to treat cancer of the uterus is in its early stages. Would it not be much wiser to take a still further advanced stand and seek to do something for our female patients in the precancerous stage—while they are only complaining of menstrual disorders, of backaches, of an abnormal vaginal discharge, or perhaps of just a general malaise? Let us learn to look on even as simple a thing as the ever present leucorrhea as a danger signal that may be the herald of a serious pelvic infection or even cancer.

I heartily believe that most of the cases who will die of uterine cancer ten or twenty years hence, if properly treated, can be cured today while the process is only a slight infection of the cervix. This statement, if true, means more than one can easily comprehend. It means for cancer of the uterus what sanitation and vaccine does for typhoid, what toxin-antitoxin does for diphtheria, or what early surgery does for the acute appendix. Let us get this thought indelibly fixed in our minds, that if a woman's pelvic organs are to be kept free of cancer or other diseases in her later years her cervix must be kept free of disease as she goes along.

We have long since learned that operations for correcting the position of a misplaced uterus are frequently unsuccessful. If those of you who have the habit of thinking of some form of suspension whenever you find a malposition will try clearing up the attendant cervical infection first, you will be agreeably surprised to find how many of the pelvic symptoms you are trying to relieve will automatically disappear without an abdominable operation.

It is also well known that many cases of sterility are due to cervical infection. We have seen enough seemingly sterile women conceive soon after clearing up this infection to prove this statement beyond a doubt.

In the thin toxic looking neurasthenic type of woman you may always expect to find a diseased cervix as one of its causes and many of these women rapidly regain a healthy normal appearance and put on weight when this infection is cleared up.

Since the uterine cervix is the focal spot from which so many ills of women spread, it is logical to assume that any treatment of whatever pelvic condition we may find that does not completely remove or destroy all of the pathological cervical tissue will in the end fall short of complete success. If tubes and ovaries were located as are the corresponding male organs, there would not be such a tendency for their removal as now prevails. Custom and practice has made the sacrifice of ovaries very commonplace, while in the case of an equally bad testicle we get better final results by rest and treating the original cause of the pathology.

For the past few years we have been trying to carry out this idea in the treatment of our female patients and, after an experience covering several hundred cases, many of whom had symptoms of aggravated pelvic pathology, we have been gratified to see what a large percentage of even the advanced types clear up and become symptom-free when the cervical infection is corrected. In fact, our results in doing this work have been so satisfactory as to thoroughly convince us that in most cases of chronic pelvic conditions, where the time element is not urgent, it would seem best to clear up the cervix infection before more radical surgery is considered.

As to treatment, I will say that we formerly used the Sturmdorf enucleation method—the technic of which may be found in any good textbook on surgery. This gives excellent results but is tedious to do, requires keeping the patient in the hospital, and is more expensive than many patients are able to stand for. For this reason, we have devised a very simple technic and adopted the use of surgical coagulation in practically all of our work. This has the advantage of being easy to do, can be practiced with very little or often no anesthesia, is thoroughly effective, leaves a splendid cosmetic appearance, and the margin of risk and failure is very slight.

In conclusion let me say that:

Infection of the uterine cervix is the cause of many systemic and local disorders, including cancer.

No examination of a woman is complete that does not include a vaginal examination, both digital and inspection with the speculum.

All cases of leucorrhea or other abnormal discharge should be considered of pathological origin and be properly treated and corrected.

Displacement of the normal uterus does not usually cause serious symptoms, and no form

of suspension of a uterus with a diseased cervix gives satisfactory permanent relief of symptoms.

Sterility may be caused by pathology of the cervical canal.

Pus tubes and diseased ovaries are frequently an end result of an improperly treated infection of the cervix and usually tend to improve or get well without operation, if the focus in the cervix is eradicated.

The menopause is a normal process and most symptoms charged to this period of life are usually due to a diseased condition of the cervix or uterus.

Treatment should include a complete eradication of all diseased tissue; for dilatation and curettage as usually practiced, except in cases of incompletee abortion, has very little place in gynecological surgery.

THE ERODED CERVIX.*

By SOUTHGATE LEIGH, M. D., F. A. C. S., Norfolk, Va.

In considering the subject of erosion of the cervix, and especially the large part paid by that affection in the causation of cancer, we feel that a clear idea of its pathology would be not only interesting but would help more firmly to impress the importance of the subject on the minds of the profession. We are, therefore, taking the liberty of quoting freely from two excellent papers appearing in the current literature, one by Strachan in the *British Medical Journal*, and the other by Reel in the *American Journal of Obstetrics*.

"Erosion of the cervix is undoubtedly the lesion most commonly met with in the female. According to varying estimates it is present, in greater or less degree, in 75 to 80 per cent of parous women and in about 25 per cent nulliparae.

"The lesion is essentially inflammatory, and when first seen the inflammation is usually chronic in type. It must be remembered that the vaginal canal, communicating as it does with the exterior, normally harbors bacteria in the lower part, but that the pathogenic action of these bacteria is kept under control by the acid reaction of the vaginal secretion due to the presence of Doderlein's bacillus. Again, the vaginal mucosa is lined right up to the external os by stratified squamous epithelium, which is resistant; it contains no glands where organisms might penetrate and lodge. The cervical mucosa, on the other hand, is covered with columnar epithelium, which is invaginated to form numerous deep racemose glands.

"The conditions, then, favoring infection of the cervix from below are either a lack of continuity of the squamous epithelium as occurs in a cervical laceration, or some factor which renders the reaction in the vagina alkaline, such as the presence of lochia; both these factors are frequently present after labor. . . .

"A very small laceration may be followed by extensive erosion and *vice versa*. It is the virulence of the infecting organisms that counts.

"The process of infection can be described briefly. The sub-epithelial tissues become hyperaemic and oedematous, with redness and swelling of the cervical mucosa. This is accompanied by an increase of the secretion from the cervical glands, which appears clinically as a mucoid or mucopurulent secretion to which the general name of leucorrhea is given. As a result of this sub-epithelial infiltration a certain number of the squamous cells surrounding the external os are raised from their bed and finally cast off, leaving a red raw circle around the os. This raw area becomes covered by columnar epithelium which has been stimulated to grow out from the cervical canal. . . .

"The infecting organism is usually one of the pyogenic cocci. Staphylococci and streptococci are the most common and are often present together; B. coli communis is a frequent cause, also the gonococcus."

Sequelae of cervical erosion include sterility and various forms of ill health from absorption, but the outstanding one of vital importance is carcinoma, the continued irritation of the damaged mucosa being a direct factor in the causation of cancer.

"Welch in 31,000 cases of cancer, collected from literature, found 20.5 per cent involving the uterus and 21.4 per cent occurring in the stomach. British statistics place the incidence of uterine involvement as high as 38 per cent. . . . Realizing the fact that the cervix presents by far the greater proportion of malignant change, it would seem that too much stress cannot be laid upon the eradication of those underlying etiologic factors which at the present time we recognize as playing an important role in furnishing the stimuli necessary to malignant formation."

To quote C. H. Mayo, "The part played by

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1928.

chronic irritation in the development of cancer is positive and definite to a degree. The danger of cancer is increased by all irritation and traumatism which demands a continuous cell repair, and it is in proportion to that demand. Ultimately, exhaustion of cell control bodies occurs, modified by age limitations and chemical surroundings. Such areas offer an increasing opportunity for a half of a dividing cell to revert to the unicellular type of life and to become parasitic and cancerous".

Ewing states that "The earliest cervical carcinoma that I have seen consisted of a localized downward growth of the hypertrophied papillae in portions of chronic erosions." "In another case a chronic erosion showed early squamous epithelium of its edges and beginning neoplastic overgrowth and metaplasia of the cylindrical cells in the gland ducts. The ease with which the cylindrical mucous cells and squamous cells replace each other has been definitely demonstrated so that the high percentage of epidermoid types of carcinoma can easily be explained."

As yet the profession has not been aroused to the dangers of cervical lesions, which exist, as stated before, in such a large proportion of women, in many of whom they are without other signs than leucorrhea.

If doctors and their women patients could be made to understand that leucorrhea should be always considered a sign of danger, demanding thorough examination to locate the cause, the occurrence of cancer of the cervix would be greatly diminished.

In a large proportion of cases, erosions of the cervix can be easily and permanently cured; but however simple, treatment should be persisted in and later examinations made from time to time, to avoid overlooking partly healed or recurring erosions.

Douches are of major importance, and it is strange how few understand that to be effective they must be taken in the recumbent position, with a fountain syringe with proper elevation. Douches taken by the average woman are not helpful as far as lesions of the cervix are concerned, the fluid escaping from the vagina before it properly reaches the cervix.

Many erosions may be cured by the application of nitrate of silver solution; some require nitric acid; and others the use of the cautery or endotherm. Repairing of the cervix by excision of the affected parts, especially when deeply lacerated, and even amputation of the cervix may be needed.

The important points to bear in mind always are that erosion of the cervix is practically and readily curable, is always indicated by an abnormal discharge, and is always a potential source of danger.

While the erosion may exist for a long period of time without undergoing a dangerous change, yet one never knows how quickly the change to malignancy may occur.

And when this change does take place we are confronted by an exceedingly dangerous affection in place of a very simple one. The transition may be slow but it may also be rapid.

The unfortunate point is that, of all conditions which may lead to cancer, erosion of the cervix usually is accompanied by the most meagre signs and symptoms. This is due largely to the fact that the trouble is located in a hidden part of the body.

Conditions preceding or leading to cancer of the surface of the body are visible or noticeable. Cancer of the alimentary tract is preceded by conditions causing marked and persistent digestive disturbances and usually pain.

Conditions leading to cancer of the urinary tract are heralded by marked signs and symptoms.

Erosion of the cervix, a frequent forerunner of cancer in its worst form, however, in the vast majority of cases produces no symptoms and the only sign is leucorrheal discharge.

Why is it that women pay so little attention to leucorrhea? If they had a "running ear" they would demand prompt relief. If they had an open sore on the surface of the body and especially on the face, they would go to any necessary extreme to obtain a cure.

Why should they not feel the same way about a "sore" located inside of the body.

Because they do not realize that they have such a "sore".

We would like to reiterate and emphasize the points made by us in former discussions, that the greatest problem in this vital matter is *to get the women to realize the danger of abnormal discharges, and to be examined so as to find the causes of the same.*

And how are we going to accomplish this long desired and vitally essential result?

It is pitiful to consider what little headway has so far been made by the profession in enlightening the women.

The mortality of cancer of the cervix is ex-

ceedingly high, notwithstanding the most advanced methods of treatment.

The treatment of these conditions which may develop into cancer of the cervix is usually simple and practically always curative.

Therefore, the only real problem to consider is to discover those conditions in time.

The American Society for the Prevention of Cancer is conducting a nationwide campaign of publicity but it must have the organized cooperation of the state and local medical societies.

At this meeting, the Medical Society of Virginia should appoint a strong committee to promptly and vigorously push the work throughout the entire state.

We are still firmly of the opinion that one of the chief reasons that women do not apply for examination and relief is that the profession, as a rule, is not making these examinations in a decent and refined manner.

We further believe that the general practitioner, especially in the rural districts, is the one who will have to educate the women along these lines, and will, in order to take care of them properly, be obliged to pay more and more attention to the subject of gynecology.

Sarah Leigh Clinic.

THE TREATMENT OF CERVICITIS AND ENDOCERVICITIS BY INTRACERVICAL INJECTIONS OF MERCUROCHROME.*

By FRANK HELVESTINE, JR., M. D.,
and
F. A. FARMER, M. D.,
Roanoke, Va.

That the treatment of cervicitis and endocervicitis has been in the past and is even now unsatisfactory is evident when one considers the various methods of treatment that have been and are now being advocated in this condition. The common modes of treatment fall under several general heads: (1) Medicated douches; (2) tamponage; (3) topical applications to the cervix with some chemical caustic such as phenol, silver nitrate or iodine; (4) actual cauterization; (5) radium; (6) diathermy, and (7) operative removal of the infected cervix. These methods are some used singly, and others in combination.

When one reviews the normal anatomy of the cervix and then the pathology connected with infection of the cervix and endocervix, it is readily seen why a number of these treatments do not reach the seat of the trouble and effect a cure.

The cervix uteri may be divided into infra- and supravaginal portions. The infravaginal portion projects into the vaginal fornix and at its tip presents a small transverse opening, the external os. The mucosa of the vaginal portion of the cervix is directly continuous with that of the vagina and, like it, consists of many layers of stratified epithelium. Normally there are no glands beneath it. The cervix is composed of connective tissue in which are many non-striated muscle fibers and a certain amount of elastic tissue. The cervical canal is fusiform in shape and presents a longitudinal ridge upon its anterior and posterior aspects from which numerous others run off transversely, giving the membrane a corrugated appearance—the arbor vitae uterina. Normally, the stratified epithelium of the vaginal portion and the cylindrical epithelium of the cervical canal meet abruptly at the external os. This, however, is the case only in early life, as in older persons the stratified epithelium gradually extends into the cervical canal until its lower half is covered by it. The mucosa of the cervical canal is composed of a single layer of high columnar epithelium which rests upon a thin basement membrane. The cervical glands extend down from the surface of the mucosa into the stroma. They are of the branching racemose variety and are merely reduplications of the surface epithelium. The epithelium of these glands contains numerous mucous cells which furnish the thick tenacious secretion of the cervical canal.

The cervical mucous membrane does not undergo cyclical changes, takes only a small part in the changes of pregnancy and is well shut off by the internal os from the uterine cavity.

When the cervix becomes infected, the inflamed mucous membrane becomes swollen and edematous. A great increase in secretion takes place. This may be purely mucoid, mucopurulent, or tinged with blood. Dense infiltration of the interglandular stroma with leukocytes is the main lesion in acute inflammations. As the subacute and chronic stages are reached, an increasing number of plasma cells are encountered. The glands increase in size. Their outlets are often obstructed and retention cysts (nabothian follicles) result.

Gonorrheal endocervicitis commonly halts at least for a time at the internal os. The great extent and rugae of the cervical mucosa afford

*Read by Dr. F. A. Farmer at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

innumerable safe hiding places for the gonococcus and other infectious organisms.

As a result of cervical inflammation, especially after it has reached a chronic stage, bright red, often elevated areas are seen around the circumference of the external os. These areas usually become continuous with the mucosa lining the canal, but may form discrete patches. In some cases the entire portio vaginalis up to the fornices is affected by the process, appearing brilliant red, hypervascular and covered with discharge. Bleeding results from the slightest touch.

The pathology of this condition in its earliest stages is represented by an infiltrated area which has become denuded of squamous epithelium due to necrosis and maceration of the surface area. The papillary area of the cervix is densely infiltrated by round cells. Cervical glands growing downward from in the canal approach this denuded area from below. This is the stage of true erosion consisting of superficial ulceration, granulation tissue and gland invasion.

In the early stages of healing, the bright red area is covered by high columnar epithelium which has all the characteristics of that of the cervical canal. Beneath the surface are numerous branched glands. The stroma is densely infiltrated. The picture is that of an inflamed portion of the cervical canal transplanted to the portio.

In later stages of healing, as the inflammation subsides, squamous epithelium grows in from the sides or regenerates from islets still remaining here and there, growing beneath the columnar epithelium and displacing it. The final healing takes place when the cervical glands have been converted into solid epithelial plugs which eventually flatten out into general surface covering.

Non-specific cervicitis and endocervicitis are in the majority of cases due to laceration, that results in erosions or ectropion. Erosion of the cervix is occasionally seen in virgins and is accountable for the persistent leukorrhea from which they sometimes suffer. There often seems to be an associated nervous element, many of these patients being of a neurotic or excitable temperament.

Specific infection of the cervix by gonococcus in the later stages produces a mixed infection in the deep lying glands. The chronic endocervicitis caused by a chronic gonorrheal infection is most persistent and difficult to treat.

The outstanding symptom manifested by cervicitis and endocervicitis is leukorrhea and it is this discharge which in the majority of cases causes the patient to apply for treatment.

It is not within the scope of this paper to discuss the various methods of treatment advocated for cervicitis and endocervicitis but, suffice it to say, in our hands, what might be described as the medical treatment of this condition has been unsatisfactory, the course of treatment required has been long and tedious, and in the majority of cases the patient would become tired and disgusted before a cure was effected and of her own accord stop treatment. We believe this also to be the experience of others of the profession. With the actual cautery our results have also been only partially satisfactory. We have had little or no experience with diathermy or radium. Operative treatment has been satisfactory but is too radical a procedure for the great majority of patients.

The method of treatment of cervicitis and endocervicitis herein to be described gives comparatively quick results, the procedure is simple and requires no complicated or expensive apparatus to carry out.

Method

The cervix is exposed through a bivalve speculum and painted with 2 per cent mercurochrome, grasped with a tenaculum to steady it, and the canal swabbed free of discharge. A 2 per cent aqueous solution of mercurochrome is injected into the tissue of the cervix at the four points of the compass and sometimes in between these points. The needle for injection is inserted into the cervix parallel to the cervical canal at the border of the mucosa and stroma. This is approximatey ½ cm. from the external os and is plainly indicated by the consistency of the tissue.

A small Luer syringe with a metal or glass extension, as in throat work and ⅝ in. 25-gauge needle are used. A few drops of mercurochrome are injected at each puncture and injection is continued as the needle is withdrawn. This needle can be inserted its full length without much danger of passing outside of the uterus. Injection under too much pressure causes pain and it is only neccessary to exert much pressure when the needle is inserted into the stroma. From ½ to ¾ c.c. of mer-

curochrome is injected at one treatment. Treatments are given from two to three times a week and an average of from six to eight are required.

Case Reports

(1) Mrs. J. H. D., white, 28 years of age, para-2, complains of severe leukorrhea since birth of last child, eighteen months ago. Cervix lacerated almost to vaginal fornices and almost entire portio vaginalis eroded. Advised operation but patient would not agree. Treated for two months with various methods without noticeable results. Nine treatments by injection method with disappearance of erosion and almost complete cessation of discharge. Patient remains in good condition up to present date.

(2) June 13, 1927, Mrs. W. H. F., white, 23 years of age, para-2, complained of irritating vaginal discharge of two months' duration. Cervix slightly lacerated with erosion about external os about ½ cm. Nine treatments by injection caused disappearance of erosion and leukorrhea.

(3) July 25, 1927, Mrs. R. L. O., white, 22 years of age, para-3, with gonorrheal endocervicitis. Exposure four days before consultation. Cervix red and edematous. Smear positive for gonococcus, copious discharge. A total of seventeen injection treatments were given, the last three being one week apart and negative smears being obtained before each treatment. This patient was seen a month later and was free from discharge and examination of smear was negative.

(4) August 30, 1927, Miss P. C., white, age 29, complained of leukorrhea of five years' standing. No pelvic pathology. Cervix edematous and eroded. Erosion and discharge cleared after seven treatments.

(5) September 2, 1927, Mrs. F. S., age 31, para-3, complained of leukorrhea of two months' standing. Uterus slightly retroverted. Cervix edematous and eroded nearly to vaginal fornices. Condition cleared up after five injections treatment.

(6) August 31, 1927, Mrs. A. L. L., white, age 31, para-1, complained of leukorrhea of fourteen years' standing. Uterus small and anteflexed. Cervix slightly edematous and there was a small erosion about the os. Condition disappeared after eight treatments.

(7) September 1, 1927, Mrs. B. C. D., white, age 19, nullipara, leukorrhea for two years beginning shortly after marriage, probably gonorrheal. Uterus slightly anteflexed. Cervix edematous, no erosion. Discharge ceased after six treatments.

(8) August 1, 1927, Mrs. J. C. C., white, age 23, para-1, leukorrhea for six months. Cervix, bilateral tear, edematous and eroded. Operation refused. After nine treatments erosion healed, leukorrhea decreased.

(9) July 20, 1927, Mrs. C. G. D., white, age 35, para-4, leukorrhea for two years. Uterus slightly enlarged and retroverted. Cervix, left lateral tear, edematous and eroded. Patient discharged after fourteen treatments with erosion healed, cessation of leukorrhea and some reduction in the size of the uterus.

(10) July 14, 1927, Mrs. E. T. B., white, age 24, para-1, leukorrhea for one year. Cervix slightly lacerated, edematous and eroded. Discharged after ten treatments with disappearance of edema, erosion and leukorrhea.

(11) August 10, 1927, Mrs. C. M. M., white, age 30, para-4, leukorrhea one year, uterus retroverted. Cervix, bilateral tear, edematous and eroded. Leukorrhea and erosion cleared after eight treatments.

(12) July 12, 1927, Mrs. C. P. S., white, age 31, para-1, leukorrhea for four years. Cervix slightly lacerated, edematous and eroded. Condition cleared up after seven treatments. Patient well October 1, 1927.

Discussion

From the time of its introduction, the use of mercurochrome-220 soluble has been recommended as an antiseptic of value in infections of the genito-urinary tract. Young and his co-workers have perhaps been its strongest advocates. In the treatment of endocervicitis of gonorrheal origin, Von Lachum and Hagar, writing from the Mayo Clinic, claim excellent results from the use of mercurochrome alternated with silver preparations and iodine. These workers paint the vaginal vault with 1 per cent solution and place crystals of the substance in the external os. Davis uses a 3 per cent to 5 per cent solution of mercurochrome as an adjunct to the cautery treatment of chronic endocervicitis. Brady in two recent articles advocates the topical application of a 20 per cent solution to the cervical canal in the treatment of gonorrheal endocervicitis.

In his monograph on "Non-Operative Treatment in Gynecology," Gellhorn describes his method of treatment of gonorrheal endocervici-

tis by infiltration of the cervix with a 1 per cent solution of methylene blue. He states that the principle of the method is to reach and destroy the gonococcus in the tissues where they reside.

The method which we have employed is essentially that used by Gellhorn. We feel, however, that mercurochrome in 2 per cent solution has a greater antiseptic value than methylene blue and thus far we have had no untoward effects with the amounts we have used for the injections.

We have used the infiltration method in both non-specific and specific infections of the cervix with very satisfactory results indeed, when compared with the results obtained from other methods of treatment. As would be expected, in the cases where there is some malposition or other pathology causing a chronic congestion of the uterus, a longer course of treatment is necessarily required to obtain the described results. In the cases complicated by cervical laceration, we would naturally expect sooner or later a return of the pathology. We have found that with this method it is more difficult to effect a cure in a case of gonorrheal endocervicitis than in the non-specific type. We do not feel justified in drawing definite conclusions from the small number of cases herein reported but we do feel that our results are promising. Work is going on and case records accumulating and we consider this article only as a preliminary report.

References.

1. Brady, L. *Bull. Johns Hopkins Hosp.*, 1925, 37, p. 400.
2. Brady L. *West Virginia Med. Jour.*, 1927, 23, p. 225.
3. Davis, C. H. *Wisconsin Med. Jour.*, 1925, 23, p. 652.
4. Von Lachum, W, and Hagar, B. *Jour. Amer. Med. Assn.*, 1923, 81, p. 1940.
5. Young, H. H., White, E. E., and Swartz, E. Q. *Jour. Amer. Med. Assn.*, 1919, 73, p. 1483.

Discussion of Papers by Drs. Robins, Raiford, Leigh, and Papers of Drs. Helvestine and Farmer.

Dr. W. H. Goodwin, University: I have been very much interested in this symposium on diseases of the uterus, and of the cervix, particularly. Dr. Robins has given us the etiology and mechanism of descent of the uterus, the stage of prolapse, and on to procidentia. This is a difficult problem; we are always meeting it, those who are doing surgery and gynecology. It is a difficult problem to decide what is best for these aged women. Some of them are in such a debilitated state and so old that very little can be done for them at all, and we have to depend upon some mechanical means, pessary, etc. The condition, of course, is likely to lead to some malignant growth, and the best treatment is operative, if possible. They endure such a terrible life for years and years.

Of course, the examination in the standing position, as Dr. Robins brought out, is very important. One can hardly determine the state of prolapse in the dorsal recumbent posture. The interposition operation (a modification of the Wertheim operation), as described by Dr. Robins, is probably the best operation. Sometimes, however, the state of prolapse is too great for the interposition operation, and then the operation which Dr Robins describes as implantation of the uterus in the abdominal wall is good. Sometimes the ventral fixation operation is very good. In some cases, where the abdomen is opened and the fundus can be pulled up almost to the chin, it is desirable to do a supravaginal hysterectomy and fix the cervix to the abdominal wall. In an aged woman, of course, who stands a long operation very badly, it is well to do as little operative work as will give relief.

The papers are certainly very timely and very apt in describing the cervix as being a focus of infection. I think not nearly enough importance has been placed on this in the past. It is to be compared to the tonsil as a focus of infection. Sometimes we find a backache that is due to infection of the cervix; any traction on such a cervix will cause severe backache. Dr. Leigh emphasized the treatment of erosion of the cervix, and it is certainly good to know that we shall have a committee to pick up these so-called precancerous lesions.

I have had no experience in treating cervicitis with mercurochrome. It seems to me that diathermy and endothermy and the cautery are good agents for the treatment of this disease, though diathermy is a little slow. The patients get a little tired of coming back again and again. I know none of us are amputating the cervix as often as we did some years ago for these simple infections.

Dr. A. S. Brinkley, Richmond: I want personally to thank these gentlemen for calling our attention to the dangers lurking in the chronically infected cervix. I think there is no doubt that it is the focus of infection causing more ills in women than any other part of the human anatomy. It is not necessary, as Dr. Raiford pointed out, to have erosion, laceration, or ulceration of the cervix to have a very badly infected cervix. My experience has been that many of these infections are very severe without any erosion. I want to emphasize the advantage of using a speculum in every examination, because often a cervix that is badly in need of attention will be overlooked if only a digital examination is made.

Dr. Raiford and Dr. Leigh pointed out the necessity of recognizing precancerous lesions in the cervix, so I shall not emphasize that.

There is no doubt that a plug of mucus is the cause of sterility in a great many cases. I wish to call your attention to an article that came out in the *Journal of Experimental Medicine*, in April, 1927, by Kurzrok and Miller, entitled "Biochemical Studies of the Human Semen and the Mucus of the Cervix Uteri." They proved conclusively that the chances of impregnation are definitely reduced in the presence of infection of the cervix and claim it is due to the action of the pus in the plug of mucus on the human semen. I have been using the Sturmdorf operation in some cases, but I do feel that we ought to go the limit and use all the

treatments, such as swabbing the cervix with silver nitrate, mercurochrome, etc., before resorting to this operation.

Some time ago I had my attention called to the treatment of pernicious vomiting of pregnancy with mercurochrome. I have had no experience with it, but I hope that Dr. Farmer will bring this out in the discussion.

Dr. J. Kennedy Corss,* Newport News: Whenever one listens to a paper of Dr. Leigh's, it always leaves behind a central thought—something that we carry with us in our future work. This paper gives us a deep knowledge into the biology and pathology of the early cervical erosion and laceration, leading up to that most unfortunate of calamities to the female—cancer of the cervix.

With all the care, with all the treatment that has been given to the subjects of gynecology and obstetrics, probably the most neglected thought has been the cervix, and only in recent years, when the ravages of cancer of the cervix have forced the attention of the medical profession, have they really given it the attention and care that they should. It reminds me of the teachings of that quaint Russian pathologist, Dr. Formad, who many years ago taught pathology in the University of Pennsylvania. He impressed the seriousness of the condition on his pupils with the remark, "Cancer comes at the seat of insult, and the parts of the human body most frequently insulted are the cervix, the stomach and the lips of smokers." The two latter of these are receiving a great deal of attention, and the cervical cancer is probably the center of the best work that is being done in the treatment of cancer of the vaginal canal. But the important thing is not the treatment of the disease *after* diagnosis, but in its prevention, which Dr. Leigh has so ably called to our attention in this paper.

The three most frequent causes which we note are infection—staphylococcic and streptococcic—gonorrhea and laceration. I think that gonorrhea should be largely treated by itself, but the other two, the infections other than gonorrhea, are nearly always associated with laceration or erosions. In the treatment of the gonorrheal cervix, I think that the average physician has been too prone to advise douches and suppositories and let the case go at that, whereas, if he assumes the responsibility of treating this case, the patient should receive active, local treatment at the physician's own hands, at his office or at the hospital.

The other two infections are nearly always associated with birth lacerations. I feel that probably the greatest field of success lies before the physician in the treatment of the cervix. For many years physicians have been taught to repair lacerations of the perineum either immediately after birth, or within the next few days, but only in the last year or so has it been brought forth by a very few to give the same early attention to laceration of the cervix. How many of us have heard the remark, "Well, let that torn cervix go until she is through having children." DeLee, in his last year book of obstetrics, lays great stress upon this. In a study of 200 recent deliveries by N. H. Williams, the record shows that 80 per cent of all primiparae had cervical injury. For the past fifteen years Titian Coffey has made it his practice to repair the cervix, except in the presence of acute infection, on the ninth day post-partum. Having had the opportunity to observe his results over a considerable period of time, the author has been convinced that immediate repair is the proper means of reducing much maternal morbidity, and has, therefore, during the past four years, routinely repaired all injured cervices on the ninth day post-partum. The technique of this operation is as follows: Following the cervical repair, the patient is returned to her bed and allowed to sit up against the back-rest. That night, and each morning and night thereafter, she is instructed to remain in the knee-chest position for periods of five minutes each. The day following the operation she is allowed up in a chair for an hour, and each day afterwards the time is increased. She is permitted to walk on the twelfth day post-partum and is allowed to return home on the fourteenth day. The result of this procedure, both anatomically and subjectively, cannot be overestimated. The patient returns to the office for the final examination six weeks after confinement. The cervix is then well healed, scarcely any scar visible, the os is small and round, admitting only the tip of the uterine sound.

The question arises as to the effect of these repairs on subsequent labor: In thirteen cases which had previously been repaired, the duration of labor was 8½ hours.

I wish to thank Dr. Leigh for his able paper on "Erosion of the Cervix," and the opportunity which it has given me to advance my own opinion in regard to the treatment of this very grave disease.

Dr. Charles Phillips, Richmond: I want to say just one or two things about the structure of the cervix which I think should be brought out. I believe the average physician does not know what the cervix is made up of. We talk very learnedly about it, look at it, and treat it; but I do not believe that those of us not doing microscopic work really know what squamous or columnar epithelium is, because the average physician does not see that under the microscope often. When one is doing much surgical pathology, he sees constantly cases of chronic infection of the cervix and these are much more common than most of us have any idea of. I want to say that the cervix is not like the tonsil. I am sorry to disagree with Dr. Raiford, but it is structurally no more like the tonsil than like the big toe. All the lymphatics in the body end in the thoracic duct, of course. There are lymphatics in the cervix of course, but to say that infection travels up and causes trouble in the joints, etc., I think is rather hard to prove. As a pathologist, I am convinced that almost every woman, if she has borne children, has evidence of some chronic infection of the cervix. Retention cysts associated with these are probably the most common. It takes but little swelling to plug up the mouths of these little glands, and then they become mucoceles. Erosions are very common. I am not sure of the percentage, but we find them frequently at autopsy.

In our campaign against cancer, we are constantly stressing irritations of the skin, etc. If we keep up our term "erosion," I am afraid our patients will not recognize the seriousness of it, but everybody knows what an ulceration is, and if we use that term our patients will be more careful.

In the use of mercurochrome, there are two or three things that ought to be brought out rather forcibly and that all of us are likely to forget. One is that any antiseptic is effective only in a certain definite degree of concentration. Then the time element and closeness of contact with the infecting organisms must be considered. Therefore, if Dr. Farmer injects his mercurochrome, I think he

*Discussion of Dr. Leigh's paper, written out before the meeting. Filed for publication owing to absence of Dr. Corss.

is getting his drug closer to the point where the germs are than if he should simply swab the cervix with silver nitrate where the mucus is soon coagulated, and the efficiency of the drug reduced proportionately.

Dr. Greer Baughman, Richmond: I would like to invite you, surgeons, to see a delivery from an amputated cervix. Gentlemen, when you amputate a cervix you are almost certainly going to give that woman a cesarean section. A cesarean section is not such a terrible thing, but it ought to be remembered when you start to amputate cervices. If there is a cervix on which a great deal of repair work has been done, a baby is not apt to come through.

Dr. C. J. Andrews, Norfolk: There are one or two practical points which it seems to me have not been brought out. I take it from the papers and from the discussions that everyone is agreed that something like seventy per cent of parous women have eroded cervices. I believe we are also agreed that it is a fairly serious thing. I believe we can go a step further and say that many of these women have the eroded cervices long before they become pregnant—even in childhood. It has been my misfortune to treat a number of young girls. I am now treating for one of our baby doctors a girl who is eight years old. The condition of the cervix there is very much the same as in older women, and there is no treatment that will cure it except local treatment. I mention this because it is my firm conviction that the medical profession does not know it. Very often I am asked by a mother whose cervix I have been treating if anything can be done for her daughter. She will say, perhaps, that her daughter has had trouble since about eight years of age and is now sixteen. The treatment is very simple—putting them in the knee-chest position, using endoscope, and using nitrate of silver or some other escharotic.

We are all agreed that it is very hard to get these women to come to us. The time, then, to get them is when you have them. It is my conviction that a great many women who have babies never see the doctor afterward. I believe they will come if they are told of the necessity. Really, I believe they are glad to come if you are prepared to treat them when they do come, and they will come until they are well.

Another thing is to put the uterus in the proper position, for they will not get well if it is lying over backward.

If we start out trying to treat all these women who have erosion we shall have trouble. The appearance of cancer is fairly characteristic; it can usually be recognized, though occasionally we find one hard to recognize; and if you treat all these erosions with the cautery you will get into trouble. Some require sections for diagnosis.

Dr. Charles R. Robins, Richmond, closing the discussion on his part: I want to call attention to the fact, as testified by what we have heard today, that infection of the cervix is a very important trouble. I am not altogether familiar with the lymphatic routes, but I think there is no question about the fact that inflammations of the cervix do cause constitutional disorders. I believe, as has been stated by several of the essayists here today, that this condition of the cervix is more frequently the cause of discomfort, pain, and constitutional disturbance than some of the other things that are in the abdomen that receive major attention.

The next thing that I wish to emphasize is that the site of the infection, the place we really have to reach, it does not seem to me, could possibly be reached by any form of local treatment. The racemose glands of the cervix, of course, are where the infection is lodged, and when the ducts of the racemose glands become occluded the tendency of these glands is to extend peripherally. They nearly always do that; and it is not at all uncommon, in examining the cervix, to feel these little shot-like projections. Of course any treatment, to be effective, has to reach these glands.

I am very glad that Dr. Southgate Leigh gets such good results from douches and nitrate of silver. Probably in some recent cases you can get good results, but I have never been able to get such results in the old, chronic cases. Probably the best treatment is some form of heat. We know that when the normal tissues are subjected to a certain degree of heat the germs will be killed out. My practice for some time has been to use the cautery. The idea is not to cauterize but to generate heat. Use it, therefore, at a stage which you might call dull red—at a low temperature. Diathermy, of course, acts in the same way but has to be used over a long period.

I was much interested in Dr. Farmer's paper, which was quite new to me. I think, as his cases bear out, he has gotten good results from this form of treatment. When we consider, however, the number of racemose glands in the cervix, it would seem a little difficult to reach them all by that method of treatment.

I want to make one statement about the connection between cancer and diseases of the cervix. Cancer is most liable to develop, of course, in a cervix in which there has been a solution of continuity and a proliferation of new cells with the effort of repairing the injury. I have heard from a person who has had wide experience in investigating cervical injury that mere inflammatory conditions of the cervix, those in which continuity of tissues has not been interrupted, very rarely develop into cancer. I do not want to discourage anyone in the search for cancer, because we know it is only in the early stages that we can do anything, but I think this point is very interesting.

Dr. R. L. Raiford, Franklin, closing discussion on his part: The question has been raised as to why women generally pay so little attention to abnormal vaginal discharges. I believe the secret is that leucorrhea is so prevalent and so lightly regarded by the profession that these patients do not realize that such discharges are abnormal. They go from doctor to doctor for years and years and nothing is done to relieve them permanently, so they naturally come to look upon this condition as an inconvenience they must endure. If we prepare ourselves, as someone has already said, to treat it and permanently cure it, then these patients will begin to come to us in increasing numbers for relief. Most of the cases I treat are picked up in routine examinations. I find that, if you treat the diseased cervix and clear up the condition there, you will be gratified to find how often not only the leucorrhea, but also many systemic symptoms, will clear up.

As to the objection of women to being examined: I think that is all a myth. In the big hospitals, the patients come in and virtually say, "Here I am; do what you think will help me," and all examinations are accepted as a matter of course. I think the same is true with the individual doctor, provided he has a diplomatic lady assistant and goes about his work in a proper professional way. At

least we have no trouble in examining our women patients

As to likening the uterine cervix to the tonsils: I did not mean to give the impression that it has any of the appearance of the tonsils, for it has not; but I said that some men have called it the tonsil of the pelvis. It is lined with a similar glandular type of tissue as composes the tonsil, and often has much the same effect on the surrounding organs and on the system as diseased tonsils have.

TREATMENT OF DYSPEPSIA.*

By DAVID M. BERKMAN, M. D., Rochester, Minnesota.
Division of Medicine, Mayo Clinic.

Dyspepsia is undoubtedly the most common of all the various complaints which bring patients to physicians. The term covers a wide variety of complaints, such as gas, belching, fullness or distention, heartburn, sour eructations, distress, burning or actual pain in the epigastrium, and circumscribed or all-embracing intolerance to food.

Only with certain acute and subacute inflammatory processes associated with peritoneal irritation, such as appendicitis and cholecystitis, do symptoms such as pain and distress present important localizing features.

From a symptomatic standpoint, the upper intestinal tract becomes the spokesman for chronic disease situated almost anywhere in the abdomen and, unfortunately, with the same vocabulary it reflects the condition of nervous stability and poise of the patient.

The abdominal viscera being largely devoid of pain-sense as one conceives of the pain-sense of the skin, the mechanism of the production of dyspeptic symptoms from any cause becomes a matter of some debate and involves reflexes and disturbances of the sympathetic nervous system and secondary interference with the motility and physiochemical function of the entire intestinal tract.

An accurate diagnosis of the cause of dyspeptic symptoms becomes the all-important consideration and the question of treatment a relatively unimportant detail. These causes may be grouped naturally into functional and organic. Eliminating malignant disease from the discussion, dyspepsia from organic causes is of two types: it is either reflex, or due to ulcer.

The diseases that may underlie reflex dyspepsia are too numerous to catalogue; the more common ones are cholecystitis, chronic appendicitis, chronic pelvic inflammatory disease, constipation, and the degenerative hepatic diseases, such as the cirrhoses and chronic pancreatitis.

The outstanding features of the ulcer syndrome are periodicity, relationship to meals, chronicity, and relief by food and alkalis. These four characteristics must be more than suggested: they must be definite and clean-cut to carry diagnostic significance. The term chronicity in this connection carries with it the idea of longevity and also the axiomatic fact that an uncomplicated ulcer never prostrates. Intermittency, in the long-standing case, is so constant a feature that its occurrence in the history is almost essential to the diagnosis of ulcer. Relationship of symptoms to meals and relief by food and soda are associated characteristics of tremendous importance, and their absence practically refutes the diagnosis. The uncomplicated ulcer does not cause distress when the stomach is comfortably filled with ordinary food.

Fortunately, in most cases, the diagnosis of appendicitis or cholecystitis does not rest on dyspeptic symptoms alone but depends largely on the more or less classical symptoms of localization. There are, however, a certain number of cases of gall-bladder disease in which the sole complaint is that of a marked digestive upset. It is in these cases that the dye method of examining the gall-bladder roentgenographically has its greatest field of usefulness, although the difficulties of this procedure together with the uncertainty of interpretation legislate against its ever even approaching the very high accuracy of roentgenologic examination of the stomach and duodenum. However, dyspepsia associated with chronic cholecystitis does exhibit certain characteristic features, prominent among which are disturbance with a full stomach and a rather uniform intolerance for certain types of food. Most of the other organic abdominal diseases which may cause digestive disturbances are susceptible of diagnosis by routine methods of physical and laboratory examination.

Up to this point, then, one has been following a routine of diagnosis more or less by elimination. During this period, however, the physician should have been acquiring an intimate acquaintance with the patient's personality, habits, environment, business and home life, and family tendencies, so that with either positive or negative physical data he may come rapidly to a decision as to diagnosis and treatment.

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Often the physician's greatest difficulty is the disabusing of his mind of the conviction that dyspepsia must be the result of organic abdominal disease. Gastro-intestinal disturbances of purely nervous origin are legion, and the amount of disability they may produce is remarkable and frequently exceeds that which may be caused by ulcer. In most instances, however, dyspepsia is only a part of the general picture and is associated with other manifestations of nervous fatigue, such as lassitude, lack of ambition. insomnia, headache, hypersensitiveness, lowered blood pressure and other evidence of vasomotor instability.

Chronic constipation exerts a tremendous influence on dyspepsia both by reason of stasis and because of the abuse to which the entire gastro-intestinal tract is subjected by the habitual use of laxatives. Its importance as a primary factor may, however, be overestimated, since constipation usually is not an isolated bowel problem but one phase of a constitutional tendency toward asthenia, nervous instability, and general lack of muscular tone.

Before treatment of any kind is instituted, it is wise to be certain first that the condition to be treated does exist, and, second, that it is responsible for the major complaints. Operation on an ulcer will usually fall short of curing migraine, and the removal of a mildly diseased gall-bladder may leave the patient without appreciable betterment of health. If the gall-bladder or the appendix is definitely diseased and demands treatment, surgery offers the only satisfactory means. The profession as well as the public is growing weary of efforts to drain the gall-bladder by applying some simple household remedy to the duodenum by awe-inspiring and complicated means. To the patient the procedure is uncomfortable, expensive, and ineffective. The diet in cholecystitis constitutes a purely negative type of treatment; it is governed entirely by the necessity of avoiding those articles of food which have been found to disagree with the patient. The average patient does not need professional advice to accomplish this. Gastric ulcer is without doubt a surgical problem, if for no other reason than its tendency to malignant degeneration.

Duodenal ulcer, if uncomplicated, becomes a separate problem in the individual case. The amount of distress which a simple ulcer of the duodenum may cause varies from brief spells of insignificant dyspepsia to prolonged spells of epigastric pain and distress which produce partial incapacity. The advisability of surgical treatment depends laregly on the patient's occupation, age and economic situation, and his ability to keep himself comfortable by simple means. The surgical risk is small but not absent; the results are good but not uniformly perfect; the situation found at operation rather frequently lends itself best to simple gastro-enterostomy which in turn exposes the patient to a certain small chance of another ulcer forming at the new opening. All of this fails, by a wide margin, to discredit surgery when good judgment indicates operative treatment. On the other hand, certain ulcers undoubtedly heal spontaneously; others respond well to a medical regimen. and, whether healed or not, may, with a little care in diet, frequent feedings, and the occasional use of alkalis, be so controlled as to become negligible. The rather ponderous and exacting regimens, such as those advocated by Sippy and others, are not nearly so much in use as they were ten years ago. They actually entail greater expense and loss of time than surgical treatment does without nearly the permanency of anticipated result. A modified diet and a program of corrected hygiene which leaves the patient ambulatory is usually sufficient when surgical measures have not been given preference.

There is surely a large nervous element bound up in the dyspepsia of ulcer; not that the disease is in any way psychogenic, but in its response to nervous influences the periods of distress and of remission so frequently follow closely the curves in nervous tension, due to occupation and other causes, that the nervous element can scarcely be ignored. This gives one a more very productive lead in outlining the regimen in cases of ulcer. It is of great importance to remove foci, to correct bad habits of hygiene as well as of diet, to reduce to the minimum nervous irritations, both occupational and environmental, and to secure frequent and regular periods of brief relaxation.

The treatment of dyspepsia of purely nervous origin presents a wide and extremely stubborn problem. Having failed in finding major pathologic changes, the physician must make a careful and exhaustive study of his patient from head to foot in order that no condition of even very minor importance may be left uncorrected. Eye strain, focal infection, in-

adequate chewing surfaces, flat feet, or hemorrhoids may in some cases be assuming an importance out of proportion to their apparent intrinsic possibilities. Before treatment of any kind, either medical or surgical, is resorted to, the relative importance of the condition to be corrected should be carefully explained to the patient to obviate misunderstandings and resultant discouragement. Major operations should be avoided if possible, and before they are undertaken the seriousness of the procedure should be carefully weighed against the probable result to be obtained, and in the final decision the patient should assume some of the responsibility.

The patient suffering from chronic nervous exhaustion is usually chronically constipated and habitually uses various types of laxatives. To correct this important complication, diet alone may be distressingly inadequate; the patient has usually run the gamut of diets of various types, in a half-hearted manner. He is discouraged with the stereotyped advice to eat spinach, bran, string beans, and so forth, because it is an old story to him. He has also become so imbued with the necessity of frequently scouring the bowels, as well as so accustomed to the temporary relief therefrom, that the problem at first is to re-educate him to secure his complete co-operation.

In individualizing the diet, progress must be made slowly. Roughage and articles of food included in the standard diets for constipation may be poorly tolerated by an upper intestinal tract which is extremely irritable and sensitive. This irritability has probably been increased by years of living on soft, bland food in small volumes. The patient must be convinced that it is more important to correct constipation and maintain nourishment than to lessen the dyspeptic symptoms as he has been doing by partial starvation. Diet to many of these patients has been their curse rather than their cure. They are undernourished, mildly anemic and in worse trouble than if they had been eating as normal persons.

Often the establishment of nutrition is of more importance at first than the direct attack on the constipation, although with the aid of a trained dietitian both procedures may be carried on simultaneously. Frequent consultation and reassurance are necessary. In the early weeks one may be forced to resort to dozens of simple means to induce defecation so that a return to cathartics may be avoided. The ingestion of quantities of water, agar agar or mineral oil, and exercise, massage, and even the occasional use of glycerine suppositories, or small retention oil enemas may save the day. As the patient gradually loses his fear of food, bulk is constantly increased and, once it has been demonstrated that results under these conditions are possible, the patient may be permitted to handle the affair himself.

Diet has become a fetish with the laity and the profession as well. Manufacturers are quoting and misquoting statments of physicians until the great army of hypochrondriacs look on three-fourths of ordinary foods as highly poisonous and view the other fourth with suspicion. In many instances remarkable cures of constipation are attributed to diet when the real factor has been the recovery by the patient of nervous equilibrium and muscular tone.

Aside from the constipation phase, the treatment of nervous dyspepsia consists more in keeping the patient from dieting than it does in instituting some new food regimen. His apprehensions must be quieted by an adequate examination, and his fears of cancer and ulcer, and the other common phobias relieved; then a common-sense program can be instituted in which diet is a detail.

Thus, the treatment of dyspepsia boils down to adequate examination, good clinical judgment and the application of common sense. If our diagnostic vocabulary could only be purged of such terms as adhesions, dropped stomach, intestinal stasis, auto-intoxication and catarrh of the stomach, the handling of patients with chronic dyspepsia might be even less perplexing.

THE TREATMENT OF WHOOPING COUGH WITH SMALLPOX VACCINE.*

By K. D. GRAVES, M. D., Pearisburg, Va.

In going over the list of remedial agents recommended for the treatment of whooping cough, one is immediately impressed first, by their multiplicity, and second, by their variety. Practically all the reference books on the subject give from twenty to thirty drugs, and more recently a number of other agents have been included in the list, such as pertussis vaccine, tuberculin, human blood from immune subjects, etc. However, the willingness of the

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

profession to try every new thing it hears of is a commentary on the efficacy of the present treatment of this disease.

Last year Dr. Grinnan[1] read a paper before this society on the treatment of whooping cough with smallpox vaccine, concluding with the following paragraph: "More tests are needed to establish the true effect of Jennerian vaccination on pertussis before it will be generally accepted; this subject is presented with the hope that this simple treatment will be given trial by other physicians." It is in response to his expression that I take the liberty of reporting the experience of myself and colleagues.

In reviewing the literature on this subject, I find that there are a good many articles by Italians, between the years 1884 and 1889, but none since until the one by Pochon,[2] of France, in 1924, apparently indicating that it was tried in Italy for awhile and then dropped.

Forty-eight persons, all under 12 years of age, were treated. Of these, three children in the same family had been exposed to whooping cough and, in view of the fact that they all had a cough and a marked leucopenia with lymphocytosis,[3] it was thought that they were in the catarrhal stage of the disease. All three secured a "take" but the cough was not relieved; it continued for about six weeks, finally terminating in an unmistakable attack of paroxysmal whooping cough. Of the other forty-five, all were vaccinated only after the paroxysmal stage had set in. With the exception of one case, who incidentally had advanced pulmonary tuberculosis, which ran a typical course, they all ceased to "whoop" about the time the vaccination reached the pustular stage. This occurred apparently regardless of the stage of the disease, except that the cases had developed sufficiently to have reached the paroxysmal stage. The cough usually lasted from one to two weeks, gradually subsiding.

In one family we had two children who developed whooping cough about the same time. In order to run parallel cases for comparison, one child was vaccinated, while the other received injections of stock whooping cough vaccine twice a week. The child who was vaccinated did not "whoop" a single time after her vaccination reached the pustular stage; while the other one ran a typical although somewhat prolonged case of whooping cough, finally developing lobar pneumonia, and was obliged to be out of school for three months.

In order to determine whether the treatment was somewhat specific or simply the response of the body to a foreign protein, we gave six children two injections each of sterile milk hypodermically at three-day intervals, without any benefit.

Of course, only children who had not already been successfully vaccinated are included in the above report. It is felt that the vaccination would be entirely useless if the person had already been vaccinated.

Conclusions.

1. Smallpox vaccine has a very definite value in the treatment of whooping cough.
2. This treatment probably has no connection with the use of foreign protein, but is to a certain extent at least probably somewhat specific.
3. In view of the above it may be wise to consider advising children of preschool age against vaccination, in the absence of a smallpox epidemic, until they have had whooping cough.

References.

1. Grinnan, St. Geo. T.: *Va. Med. Monthly*, May, 1927.
2. Pochon, G.: *Med. Infantile Paris*, 30, 203, July, 1924.
3. Heiman, Henry, *J. A. M. A.*, 83:4, July, 1924, p. 299.

Discussion.

Dr. St. George Grinnan, Richmond: In 1924 I ran across the work of Pochon, who is a Frenchman. That was the first report I had seen of the use of what he called the Jennerian or smallpox vaccine for whooping cough. I tried it for two years in Richmond on some children. I had no idea there was anything in it. After trying it for some time, I was amazed to see the remarkable results. Some men who have tried it have not been altogether successful. I think, in the first place, the vaccine has to be new, and you have to determine you have whooping cough. I have tried it in some very severe cases, and the results were right remarkable. What I introduced last year was to try to have someone do what Dr. Graves has done—have this tried by someone else. I had a dozen cases, and he has forty cases, so his report is much more valuable than mine. Dr. Harrison,, of Danville, said he had been using it since he heard of it in Norfolk, last year, and not a case but had improved. He had one family in which there was a case of whooping cough. He had wanted to vaccinate them for smallpox, but the mother would not allow it. She called him up and asked him to come and vaccinate the child for whooping cough. She was out when he got there, and he went ahead and vaccinated the whole family (six of them) with the smallpox vaccine. The mother was very well pleased with the results but did not know, probably, that it was a double vaccination.

FOREIGN BODIES IN THE AIR AND FOOD PASSAGES.*

By ELBYRNE G. GILL, M. D., F. A. C. S., Roanoke, Va.

In a brief discussion of this subject, only a few outstanding points can be mentioned. Before taking up the question of determining whether a foreign body is present in the air or food passages, we should emphasize the following:

1. Every foreign body case is a law unto itself, and presents a problem to be solved.

2. Every suspected case should be hospitalized and studied from a medical and roentgenological standpoint and if necessary endoscopically.

3. Foreign bodies that have entered the air and food passages through the natural passages should be removed endoscopically and not by an external surgical procedure.

4. The profession, in referring cases of this type to the endoscopist, should realize the importance of careful and thorough study of the case before bronchoscopy is attempted. We frequently have patients sent to the hospital for removal of a foreign body and they often want the operation done immediately in order to take the next train home. They have been advised that the operation is simple and will only require a few minutes. The advice was given honestly but it is wrong and misleading. There is no branch of surgery which requires as much skill and precision as does the removal of a foreign body from the bronchus of a child. Ample time should always be given to study the case and prepare every detail before passing the bronchoscope, as your success will depend largely upon your preliminary study and preparation.

5. The difficulty in removing a foreign body increases with every hour it is allowed to remain in the bronchus, but one should never be "goaded" into attempting bronchoscopy after a hard day's work. Mental and physical alertness, plus well trained assistants and good equipment, are prerequisites for success.

Kind of Foreign Bodies.

The air and food passages may be invaded by any foreign substance of solid, liquid or gaseous nature, from the animal, vegetable or mineral kingdoms.

The majority of foreign body accidents are due to carelessness in some form.

Pathology.

The pathology in foreign body cases depends upon the quality and the location. Vegetable foreign bodies, such as peanuts, beans and grains of corn, produce a violent tracheobronchitis in a short time, and will be quickly fatal, if not removed or expelled. A non-obstructive metallic foreign body, though ultimately serious, may remain in the bronchi for months before any appreciable degree of pathology is produced. (Jackson).

Symptoms and Signs.

The initial symptoms are choking, gagging, coughing and wheezing. These symptoms sometimes escape notice and the patient may be free of these symptoms for a long period. Flat objects like coins always lie with their greatest diameters in the coronal plane of the body when in the esophagus and in the sagittal plane when in the trachea or larynx.

Methods of Diagnosis.

The diagnosis is made by a careful history, complete physical examination, laryngeal mirror, fluoroscopic, roentgenological and bronchoscopic examinations.

Prognosis of Foreign Bodies in the Air and Food Passages.

According to the statistics of the Bronchoscopic Clinic, only from two to four per cent of bronchial foreign bodies are coughed up and ninety-nine per cent of foreign bodies in the lungs can be removed bronchoscopically. Foreign bodies in the esophagus can be removed by esophagoscopy in almost all cases. Jackson in eight hundred cases has not had to resort to external esophagotomy in a single instance.

When we consider the mortality of external esophagotomy for removal of foreign bodies is from twenty to forty-two per cent while that of esophagoscopy is less than two per cent, it seems incredible that some surgeons will persist in performing external esophagotomy.

Department of Bronchoscopy, Gill Memorial Eye, Ear and Throat Hospital.

Reference.

Jackson: Bronchoscopy and Esophagoscopy, Second Edition.

Discussion.

Dr. W. W. Gill, Richmond: I want to congratulate Dr. Gill upon doing this work. I know that

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

he has put a great deal of study in it. I remember that some years ago Dr. White, of Richmond, attempted to do some of this work, experimenting on dogs, trying to pass various instruments. At that time I realized that in order to do this work in an efficient manner, one would have to have a good many patients and skilled assistants. Of course, since then the work has progressed. I think that in as much as there are so few people doing this work efficiently, and Dr. Gill's pictures show that he is doing it in a most efficient manner, we should all be very glad there is some one in Virginia doing this work.

Dr. A. L. Gray, Richmond: I am very much interested in this paper of Dr. Gill's. I think the subject of foreign bodies, especially in the air passages, is one to which we have paid too little attention in our section. It has been the usual custom, the moment we thought of a foreign body in the air passages, to hustle the patient off to Dr. Jackson, who, of course, is the wizard of all wizards in that particular line of work—the removal of foreign bodies.

Dr. Gill has discussed the removal but has said very little about the diagnosis. He has shown you a number of films in which the lung had already undergone what we call "waterlogging." The diagnosis should be made before that takes place, if possible, because the risk to the child (it is a child usually) is very much greater after that has taken place. Of course it is a very simple matter to diagnose by X-ray methods the presence of an opaque foreign body. The thing that taxes our ingenuity is the determination of the presence or absence of a non-opaque foreign body; and, as Dr. Gill has already told you, they are the ones that cause the most rapid and most serious trouble. Perhaps just a reference to the methods that we pursue in determining the presence of a non-opaque foreign body is all that it would be appropriate to mention. If you will bear in mind the effect that obstruction to the main bronchus or one of its branches will have on the lung which is supplied by that bronchus or bronchial branch, then what we look for will not be so mysterious. First of all, if the entire bronchus is obstructed so that air can neither enter nor escape, that lung is going to remain perfectly still. The diaphragm will move in neither direction; it will remain approximately at its normal height—that is, the diaphragm on the affected side. On the other hand, if air can pass into the lung by the foreign body on inspiration and can not pass on expiration, you obtain an emphysema of the portion supplied by that branch. Observation under the fluoroscope is of the most importance. In the case of an obstructive emphysema, you might observe the heart and mediastinal shadow swinging from side to side with the respiration—or the portion of the mediastinum that is nearest the part affected or opposite the part affected. Again, the diaphragm on the affected side will be depressed. On inspiration, it may be driven a little farther down; whereas, on expiration it remains still depressed; whereas the normal lung emptying, permits the diaphragm to ascend. So we have something of a paradoxical condition; the diaphragm is depressed on the side affected and it moves freely on the opposite side. We can not, of course, go into a very long technical discussion of this; but I want to say that careful observation of these children who are suspected of having aspirated foreign bodies will frequently give most positive evidence of their presence; and the sooner they are discovered the better it is for the child.

Dr. James W. Hunter, Norfolk: I had not intended to say anything, but the matter is too important to pass over lightly. I think in all of these cases that the history—clinical symptomatology—should be emphasized most profoundly. But sometimes the history is misleading. I saw a case some time ago of a little colored boy, in which several very good men had fallen down. The bronchoscopist himself said he was sucking out a peanut, and he sucked out the membrane from laryngeal diphtheria. The child quickly recovered. In another case there was an enlarged thymus instead of a foreign body. So, while the history must be emphasized (and the clinical symptomatology most profoundly), sometimes we shall be fooled by a laryngeal diphtheria or an enlarged thymus.

A SINGLE INCISION FOR THE OPERATION FOR ABDOMINAL HERNIA, APPENDECTOMY, AND PELVIC DISEASE.*

By G. PAUL LAROQUE, M. D., Richmond, Va.

Actually there are a large number of people who have a satisfactory operation for hernia and later have had to come back for operation for appendicitis and other abdominal disease. A much larger number continue to suffer the indigestion and recurrent pains of chronic disease of the appendix or some other intra-abdominal pathology which could have been cured at the same time the hernia was operated upon.

Case No. 23-4229. A man thirty years old had been operated upon by other surgeons three times for bilateral inguinal hernia (twice upon the right side) and once for epigastric hernia. Five years following his last operation he was seized with acute abdominal pain; one very good doctor felt sure it could not be appendicitis because of the two previous operations for the right hernia, the last by a surgeon whom he believed must have removed the appendix. The man was treated for indigestion; the next day he was desperately sick. At operation, I found a ruptured appendix.

I have personally operated for appendicitis upon more than fifty patients who had previously been operated upon for right inguinal hernia. Actually also a large number of people have had the appendix removed and later found to be the victim of right inguinal hernia. If when operating for appendicitis surgeons will look and feel for the sac of inguinal hernia and remove it, much good will be accom-

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*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, at Petersburg, Va., October 18-20, 1927.

plished and a second operation averted. A single case must suffice to illustrate more than fifty such cases in my own experience.

Case No. 25-5185. A boy of nineteen years of age was brought for an emergency operation for suppurative appendicitis. Through a low muscle splitting incision for appendicitis, the hernia neck was seen from within; this was excised in the usual way and was found to be about the size of a duck egg. The next day when informed that he had been cured at the same time of a hernia on the right side, he said he had no previous knowledge of its presence.

As a matter of fact, uncomplicated, reducible abdominal hernia does not give rise to pain and causes few or no subjective symptoms. People who have hernia, when they have abdominal pain, dyspepsia or other symptoms, attribute their symptoms to that which they can see, namely, the hernia. Physicians and surgeons may have shared this belief. Perhaps we all tend to blame things upon that which can be seen. Complete examination of people with hernia with great frequency finds a history and physical signs of independent pathology elsewhere.

The simple procedure of splitting the muscles about an inch above the internal inguinal canal and inspecting the organs, shows great frequency of associated disease of the appendix and pelvic organs, permits their simultaneous cure, and gives the ideal method of approach to a hernial sac for removal.

In men with combined right hernia and appendicitis, the following are cited as examples of an extremely common association:

Case No. 19-3122. A man thirty-five years old was referred for operation for right inguinal hernia with a history of repeated attacks of colic and indigestion; he and his doctor both had attributed this to the hernia. He had a typical history and signs of recurrent appendicitis. The appendix was partially destroyed by previous disease and bound down by dense adhesions. The appendix and hernia were removed through the same low muscle splitting incision into the peritoneal cavity and the inguinal canal closed by the Bassini method.

Case No. 26-5530. A young doctor had been putting off operation for hernia the size of a lemon for several years. Suddenly he developed acute appendicitis. Through a low muscle splitting incision an inch above the position of the internal ring, the hernial sac was removed, the canal closed under the cord and a suppurating appendix removed. Two weeks later he was walking up four flights of steps attending to his hospital duties and now, a year and a half since the operation, he is perfectly well.

Case No. 26-5516. A man, age fifty-five had had bilateral inguinal hernia, for years, for which he kept postponing operation. He suddenly developed acute appendicitis, took purgatives and thirty-six hours later came in for operation for suppurating appendicitis. Doing the cleanest part of the operation first, the left and then the right hernia were removed and both canals closed under the cord. Finally, a suppurating appendix was removed. The man is cured of crippling double hernia and considers the attack of appendicitis a blessing in disguise.

In women with hernia and pelvic disease cured at the same operation, the following cases are cited:

Case No. 19-3159. A woman with femoral hernia since childhood, for ten years has had repeated attacks of pain, tenderness and irreducibility of the hernia. At operation there was found a piece of omentum the size of a small orange incarcerated and adherent in the hernia, a right ovarian cyst the size of an orange, non-adherent and with a small pedicle. The hernia, the cyst and the normal appendix were all removed, through a low muscle splitting incision into the peritoneal cavity about an inch above the neck of the hernia.

Case No. 19-3001. A woman thirty-seven years old with a large left inguinal hernia and long standing prolapse of the uterus received, at one sitting, perineorrhaphy and, through a transverse abdominal incision, removal of the hernia, closure of the inguinal canal, appendectomy, removal of both tubes and high suspension of the uterus. Convalescence was normal and cure complete.

Case No. 25-5194. A young woman referred for operation for right inguinal hernia the size of a lemon. Examination showed in addition to the hernia, lacerated cervix and perineum, right ovarian cyst, displacement of the uterus and suppuration of both tubes. The cervix was amputated, perineum repaired and through a right mid-line incision the hernia sac, uterus, both tubes and right ovarian cyst

and appendix removed. The incised peritoneum above the inguinal canal was easily sutured to the mid-line incision. It has now been nearly two years since the operation and the woman is cured of all disease.

Such cases as reported above are so common in the experience of every surgeon that I feel almost like apologizing for citing them. My own experience in operating upon more than twelve hundred cases of abdominal hernia has been that in approximately 60 per cent of right inguinal hernia in adults, I have removed through the same incision diseased appendices, and in nearly two thousand people operated upon for appendicitis, abdominal hernia has been operated upon through the same incision in more than 4 per cent. In about fifteen hundred to two thousand women operated upon for pelvic disease, abdominal hernia was simultaneously cured in approximately 3 per cent; and of the women who came primarily for hernia, approximately 80 per cent had also pathology of the pelvic organs. These figures are lower than the actual frequency of association owing to the fact that in many of the earlier cases, associated diseases were overlooked.

The point to be emphasized is that when a patient is to be operated on for hernia, appendicitis or pelvic disease, the whole abdomen should be examined before operation and the incision should permit a thorough exploration of the region in the abdomen upon which the patient is to be operated. For years I have advocated the removal of inguinal and femoral hernia through an incision into the abdominal cavity an inch above the neck of the hernia. I have employed this incision in more than twelve hundred cases with the greatest satisfaction in securing an easy and complete enucleation of the hernial sac in full view and without danger to neighboring structures (vas deferens, vessels and bladder) and above all with complete and permanent cure of the hernia. Through this incision for hernia of the right side, the appendix is easily removed unless very densely adherent to caecum located nearly as high as the umbilicus; and on either side any disease of the tube and ovary is accessible.

My plea now is for a routine adoption of some such incision as this for the discovery and removal of the sac of hernia, appendix, and co-incidental pathology of the female pelvic organs.

835 *West Grace Street.*

Discussion.

Dr. Wm. Lowndes Peple, *Richmond:* Of course, most of us who work in the clinics of the Medical College of Virginia are familiar with this operation which has been developed by Dr. LaRoque. I have done it on one or two patients and have seen him do it on a number of others. I think it is an excellent operation if one has planned to do an appendectomy and hernia at the same time. I am not prepared, however, to go as far as Dr. LaRoque goes and use it in acute cases. In chronic cases, with a chronic appendix which is inactive, it is certainly a splendid operation. It gives a far better approach to the appendix than we can get through the ordinary hernia incision. In the instances in which I have used it and in which I have seen it I commend it, but I think Dr. LaRoque is a little enthusiastic in extending it to acute cases.

BACILLARY DYSENTERY IN VIRGINIA WITH REPORT OF CASES.*

By WM. H. HIGGINS, M. D., Richmond, Va.

Among the discouraging chapters in medical history, none stands out in any more bold relief than the one dealing with the fruitless efforts to combat the dysenteries. Practically every long military campaign and extended siege since the memory of man has produced an epidemic of this type. Edward I and Henry V of England died of this disease and it is said that 75 per cent of the latter's army succumbed to the same infection. In our own Civil War it exacted a frightful toll and, in 1914, Sir Wm. Osler said that while typhoid fever would be controlled, dysentery would play havoc with the allied forces. Military records show only too vividly the wisdom of this statement. In both military and civilian life these epidemics have reached vast proportions and have baffled sanitary experts for many generations.

Differentiation of Types. Lambl in Prague in 1859 made the first step toward unshrouding the mystery of dysentery by describing the amoebae in the stools of a child dying of diarrhoea. In 1898 Shiga discovered an organism which identified another large group and, two ears later, Flexner isolated a different type which included the Hiss-Russell, Y, and various other strains. Both the Shiga and the Flexner groups are found in Virginia.

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I am indebted to Mr. Aubrey Straus, State bacteriologist, for the following data relative to the incidence of these two types in Virginia: Shiga dysentery usually occurs in epidemic form only, but sporadic cases also are found. During 1926 one case which was fatal occurred just outside of Richmond and in the Spring of 1927 another case was found in the city. The epidemics within our definite knowledge have always appeared in the mountainous sections of the State and are usually very severe. There was a serious outbreak in 1921, in Carroll and Grayson counties. In this epidemic the morbidity was very high with a mortality of seventeen or more. In 1923 there was an epidemic in Madison and Greene counties with forty cases and seven deaths. In the summer of 1927 there was another widespread epidemic which Dr. J. O. Meade, in a personal communication, stated reached seventy cases with six deaths. As there was no accurate tabulation of these outbreaks these figures are only approximately correct.

Flexner dysentery is to some extent endemic throughout the State, being found principally in young children. Besides the occurrence in infants the disease also appears from time to time in epidemic form when adults are also infected. According to the State laboratory reports, there were in the city of Richmond during 1926 thirty-two cases of the Flexner type, six of whom were adults. Out of this series four died. These epidemics vary greatly in intensity and in case fatality. They are usually smaller in scope and less fatal than the epidemics of the Shiga type. In several instances such outbreaks have been diagnosed by the physicians as typhoid fever where no laboratory examinations were made.

Laboratory Studies. From a laboratory standpoint, either type of the disease may be diagnosed by the bacteriological examination of the feces or by the agglutination test made with the blood serum. In the early stages of the infection, stool examinations are the most satisfactory methods of study but, according to Davidson, after the first week the agglutination test affords a better opportunity for positive identification. The proper collection of the stools is of the utmost importance. Many of the negative reports are due to the age and dried condition of the specimens.

Dysentery bacilli cannot as a rule be cultivated after two or three days' sojourn in the feces. In the majority of cases, B. dysenteriae are greatly outnumbered by B. Coli and unless the specimens are fresh the isolation of the dysentery organisms is difficult and often impossible.

Positive blood cultures have been reported only in rare instances. Ashworth, of Richmond, had one patient in 1926 from whose blood a Flexner growth was obtained by Straus.

Clinical Data. The incubation period varies from one to eight days. It is supposed that the organisms die in the intestines and liberate an endotoxin which has two effects; one local, due to contact with the intestinal mucosa, and the other, systemic due to absorption into the blood stream.

The symptoms may simulate very closely those of typhoid fever as in at least one instance in the State this year an epidemic of bacillary dysentery was being treated for typhoid until the report from the State laboratory made the correct diagnosis.

The onset is relatively acute and is usually characterized by cramp-like pains in the abdomen, general malaise, fever, headache and diarrhoea. The stools are profuse and often consist largely of blood and pus. Straining and griping are constant features resulting at times in prolapse of the rectum and consequent incontinence of feces. The temperature varied from 101° to 104° in all of my series with a corresponding increase in pulse rate. Although there is usually a mild leucocytosis, a leucopenia of 3,700 after an initial count of 8,200 cells was found in one fatal case which is reported in detail in another paragraph.

According to Davidson, the duration of the disease is from four to eight days in the mild cases and three to six weeks in those that are severe. Relapses are common but reinfections are rare. Unfortunately the acute stage may merge into the chronic form which according to some observers occurs in about 5 per cent of all cases. Chronic carriers lasting from two to ten years have been reported, but as a rule they are less protracted than the typhoid carriers. Fletcher and McKinnon in a recent study of 1,782 British soldiers convalescent from dysentery found seventy-four still excreting dysentery bacilli. The average Flexner carrier was healthy and had normal stools. The Shiga carrier on the other hand was generally an invalid and had recurring attacks of diarrhoea. The mortality among adults and

children has shown a marked variation in different countries. Shiga found for the whole of Japan that the death rate was from 22 to 26 per cent. In Germany it is given as 10 per cent and in America approximately 20 per cent. It is particularly high in young children and debilitated persons. It is impossible to obtain accurate figures on the death rate in Virginia as bacillary dysentery is not a reportable disease and in the vital statistics it is classified with all forms of diarrhoea. Our epidemics have shown a decided variation in severity in different localities.

My own experience with bacillary dysentery this year is limited to six patients, including two children in and near Richmond, who form the basis of this report. Five of this series were critically ill, one of them dying in a comatose state after an illness of twelve days. In one household an adult and two children were seen with Dr. J. E. Warinner. The older member of this particular group had recently nursed a neighbor with a similar infection who in turn had been exposed to an epidemic in Nottoway county, where two members of her family had succumbed to the disease. All three cases in this household presented evidences of marked prostration, typhoidal temperature, abdominal pain, tenesmus and numerous stools consisting chiefly of blood and mucus. One of these cases (an adult) lay in a comatose state for eight to ten days and could be aroused only with difficulty. No complications developed and after an illness of six weeks they entirely recovered. The fourth and fifth adult cases were under my observation at St. Elizabeth's Hospital and presented the usual signs and symptoms of this infection. In the fourth patient positive cultures from the feces for the Flexner organism were secured on the sixth day. In the fifth case stool cultures were negative but positive serum agglutination reaction was obtained at a later date. Both of these patients came from distant communities, making it impossible to trace their sources of infection. The sixth case was a woman, age forty-one, who was seen in consultation with Dr. Stuart Michaux at Stuart Circle Hospital. She had entered the hospital complaining of headaches, and while diagnostic studies were being made, she developed an elevation of temperature, prostration, abdominal pain and a bloody diarrhoea. Aside from a moderate degree of abdominal tenderness her physical examination was essentially negative. In the early part of her illness the leucocyte count was 8,200 cells with 63 neutrophiles, 36 lymphocytes and 1 eosinophile. Seven days later the white cells were reduced to 3,700 and the differential count showed 17 neutrophiles, 60 lymphocytes, 12 endothelial cells and 11 lymphoblasts. Stool cultures were positive for the Flexner group.

Her comatose condition gradually became more profound and she finally died on the 14th day of her illness. A complete autopsy was performed by Dr. Chas. Philips, the essential points of which are as follows:

"The heart shows a moderate degree of early interstitial fibrosis and some cloudy swelling. The liver shows a very extensive infiltration and degeneration crowding the parenchyma about the central veins into islands that show cloudy swelling. The spleen is actively hyperemic and of the picture of an early sepsis. The piece of ileum excised for study shows an acute phelgmonous inflammation with extensive necrosis of the mucosa and extension of the infection toward the walls. There is an unusual degree of active hyperemia and hemorrhage in the walls and in some places there are small thrombi in the dilated vessels. No definite ulceration was found for the entire mucosa was necrotic. The piece of colon excised for study showed the same type of necrosis of the mucosa but less severe and accompanied by edema of the submucosal tissues. The mesenteric glands showed marked swelling of the sinuses with large cells, probably endothelial in origin and with resultant disorganization of normal structure. The kidneys showed a diffuse acute nephrosis of moderate severity."

The object of this paper is to bring before this Society the fact that bacillary dysentery is not a rara avis in Virginia but a recurring disease of sufficient proportions to command our serious consideration. The pediatricians have emphasized its role in infant mortality but very little in recent years has been written about its frequent occurrence in adults. Reports indicate that the infection is not peculiar to any one section of the State but on account of its highly infective nature many communities have suffered from its presence.

The chief enteric fevers in Virginia are typhoid, paratyphoid and the dysenteries. Five years ago 2,841 cases of typhoid were re-

corded by the State Epidemiologist. In 1926, 1,597 cases were found and up to September the first of this year only 871 positive identifications have been made. Although we have no accurate data on the frequency of the paratyphoid fevers, there is ample proof that they also are on the decline. The State Board of Health and the medical profession of Virginia may justly look with pride to this record as it has been through the efforts of these two organizations that the morbidity and the mortality of these infectious diseases have shown this substantial reduction.

Bacillary dysentery on the other hand is apparently on the increase in Virginia, and unless effective measures are taken to isolate and make proper disposal of dysenteric excreta we may reasonably look forward to an even greater number of cases in the near future. The stools of patients suffering from bacillary dysentery provide the sole source for the transmission of the disease. The prevention depends upon the recognition of the sources of infection and upon the control over the channels through which the infection is spread. Diagnoses of "summer diarrhoea" or "catarrh of the bowel" must be discarded and a greater effort made to determine the true nature of these enteric infections. Every patient passing stools which show even microscopic evidence of pus and blood should be considered potentially infectious until laboratory studies have proved otherwise. The mode of infection of bacillary dysentery is identical with that of typhoid fever and the same sanitary measures which are used for one are equally imperative for the other. It is only in this way that epidemics of this type can be successfully controlled and the communities saved from an increasing menace.

Medical Arts Building.

DISCUSSION.

DR. J. E. WARINNER, *Richmond:* This question of bacillary dysentery is certainly a thing to which we ought to give more importance, as brought out by the statistics which Dr. Higgins has given us. I should like to enlarge just a little on the cases which I saw and which Dr. Higgins saw with me this past summer. I had delivered a patient two days before the beginning of this dysentery in one of the children. Fortunately, the mother and young baby were spared. Two days after the mother was delivered she asked me to see a child four years old, who was suffering then with the dysentery. The next day she said she wanted me to see the other child, who had the same symptoms. The third day she told me the grandmother was sick, and I saw her. They were the three cases. Fortunately, we did not have any more in that particular house. The marked features of the disease in this family were, first, marked prostration. The two children were decidedly prostrated, but the most profound prostration and the quickest prostration I have ever seen was in the old lady, seventy-six years old. The children were two and four years old, respectively. The grandmother's onset was about four o'clock in the morning. I saw her about ten thirty and at that time could hardly rouse her. Until about eight o'clock I think she was fairly rational. She answered questions in monosyllables at ten thirty. She remained that way for six days. Pain was a rather decided symptom and was manifested by grunts and groans just before an evacuation. At first her stools were rather copious, with a moderate amount of fecal material, but there was mucus right from about the second stool. A day or two later her stools were not so that you could count them at all; it was practically an incontinence, with a grunt and a groan and a little oozing out of blood and mucus, with no fecal material at all. Her heart during this time did fairly well. We could get a little medicine into her and started digitalis and held her pulse down to from 100 to 110 practically all the time. She was a rather thin individual to start with and was nothing much but skin and bones when she began to take some nourishment later. The children had practically the same experience, with a grunt and a groan and a little oozing out of blood and mucus.

I notice Dr. Higgins said very little about treatment and think he is very wise, for there is not much to say. I used the serum for bacillary dysentery, but I can not say there was any improvement following the serum. I hope very much that I did not give it a fair trial and that we shall have better results later. The treatment consisted of sustaining the patient as best we could and stimulants, holding the diet down to the most non-irritating liquid and soft food The thing from which I got most results was starch and laudanum enemata. Bismuth and paregoric by mouth did practically no good.

I want to thank Dr. Higgins for his paper and emphasize that we be on the lookout for these cases, because I think we shall find them if we look for them.

THE VALUE OF HISTAMINE IN THE DIFFERENTIATION OF TRUE AND FALSE GASTRIC ANACIDITY.*

By DEWEY DAVIS, M. D., and
DOUGLAS VANDERHOOF, M. D.,
Richmond, Va.

It has been conclusively shown that histamine is a powerful stimulant to gastric secretion. Ivey, McIlwain and Javois[1] applied a 1 per cent solution of the compound to Pavlov pouches in dogs with a resulting prompt and decided secretion of gastric juice. When injected subcutaneously in human beings it has a like effect, as was shown by Matheson and Ammon[2] and Carnot and Libert[3]. The latter authors suggested that it be used in place of

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the standard test meal, since the gastric secretions would then be free of contaminating food particles and a more accurate determination of acid values could be obtained.

Dobson[4] studied the effect of histamine on the gastric secretions of eleven individuals who had previously shown achlorhydria in one or more fractional test meals. He was able to divide his cases into three classes: (1) Subjects with intermittent achlorhydria in which repeated test meals showed eventually a secretion of free acid; (2) intermediate achlorhydria in which hydrochloric acid appeared only after stimulation with histamine, and (3) persistent achlorhydria in which no free acid was found after histamine stimulation.

Gompertz and Vorhaus[5] tried the test on seventeen anacidity cases. Ten of these secreted free hydrochloric acid after the histamine injection, while seven showed no response or only traces of free acid. Two of these latter cases had carcinoma of the stomach and a third cholelithiasis. The remaining four were considered as instances of achylia vera. The authors noted that these four individuals showed more marked improvement under hydrochloric acid therapy than any of the other thirteen.

Histamine is a product formed by the putrefactive action of bacteria on the amino-acid, histidine. When injected into human beings in doses of 0.5 mgm. to 1.0 mgm., it frequently causes a decided general reaction. This consists of a fall in blood pressure, an increase in the pulse rate, a flushing of the face and a full throbbing sensation in the head with occasionally slight headache. We have noted that these symptoms are most pronounced in individuals exhibiting evidence of an unstable vasomotor apparatus. The most marked reaction occurred in an individual with a moderately toxic adenoma of the thyroid. He developed a mild fainting attack about five minutes after the injection was made. The reaction begins two to three minutes after the injection is administered and lasts from fifteen to thirty minutes, although some individuals notice no more than slight palpitation of the heart and flushing of the face.

It has been our custom to use a dose of 1.0 mgm. in 1-500 solution. This is prepared in quantity and sterilized by boiling, after which it is stored in ordinary rubber capped vaccine vials. This method is convenient and insures sterility. If contamination should occur, the solution is worthless, as histamine is broken up by bacterial action. The dose is given hypodermically, and there seems to be little advantage in giving it intramuscularly except that it is absorbed a little more promptly.

We have studied the effect of this dose on sixty individuals, all with gastric symptoms and a lack of hydrochloric acid at one or more examinations. The standard test meal was approximately 30 grams of bread with 300-400 c.c. of water. Specimens were extracted at fifteen minute intervals thirty or forty-five minutes after the test meal was given, and continued for thirty to sixty minutes. In our first few cases we gave a second test meal on a subsequent day with the administration of histamine, but found that this plan was inconvenient for most patients, especially those coming from a distance. Also, few people relish swallowing a duodenal tube repeatedly. Consequently, we adopted the routine of testing the portions extracted up to sixty minutes in all patients subjected to gastric analysis. Any individual showing no free acid in all of the fractions is immediately given 1.0 mgm. of histamine hypodermically followed by extractions at fifteen minute intervals for thirty to forty-five minutes. This method has the advantage that it completes the test at one sitting, it brings out a delayed secretion promptly and, if no free acid appears, it establishes the diagnosis of gastric anacidity.

Of the sixty patients so tested, thirty-eight showed no secretion of free hydrochloric acid after the administration of histamine. Twenty-six of these individuals had shown no free acid at previous examinations, ranging in number from one to sixteen, over a period of months or years. Twelve had not been previously examined. Six of these patients had active pernicious anemia or were in a remission of this disease. In the remainder, no organic pathology was demonstrated that could account for the anacidity.

Twenty-two of the sixty patients had no free hydrochloric acid in the gastric contents before the histamine was injected, but, after the injection, in fifteen minutes the majority showed a definite secretion of free acid, and in all free acid was present in the thirty minute extraction. Comparing the thirty minute fractions (after histamine), fourteen showed free acid values below the accepted normal, four were normal, and in four the acid value was definitely above normal. We have

applied the diagnosis, dyschylia gastrica, to this type of case, meaning an imperfect gastric secretion. Eight of these individuals had previously been submitted to gastric analysis and were considered instances of gastric anacidity while fourteen were taking their initial examination.

The value of the test is evident from the diagnostic standpoint. It establishes practically beyond question whether or not active gastric glands are present, and we believe that the majority of individuals who show no acid response have a permanent anacidity. This statement will necessarily require additional time before final conclusions can be drawn.

The test is of distinct value in prognosis. Under appropriate treatment these subjects with slow and imperfect gastric secretion may eventually recover their secretion. Also, we have gotten the impression that individuals showing no free hydrochloric acid with the histamine test are more apt to improve under hydrochloric acid therapy, although we have no statistics as yet to support this point.

We know of only one definite contraindication to its use and that is during pregnancy. The drug stimulates uterine muscle and might produce unhappy results under this circumstance. On account of the marked reaction it is also probably inadvisable to use it in the presence of hyperthyroidism.

Conclusions

1. Histamine is a powerful stimulant to the acid secreting glands of the stomach.

2. In proper dosage it may be used with impunity as a test for gastric function in the great majority of patients.

3. It is capable of quickly making manifest a dormant or latent gastric secretion.

4. In differentiating between complete and false anacidity, it is of practical value.

References.

1. Ivey, A. C., McIlwain, G. B., and Javois, A. J.: The Stimulation of Gastric Secretion by Histamine. *Science*, 58:286, 1923.

2. Matheson, A. R., and Ammon, S. E.: Observations on the Effect of Histamine on the Human Gastric Secretion. *Lancet*, 1:482, 1923.

3. Carnot and Libert: Compt. Rend. de la Soc. de Biolog. 93:242, 1925; abstr. *J. A. M. A.*, 85: 1009, 1925.

4. Dobson, H. V.: Effect of Histamin on Gastric Secretion with Special Reference to Achlorhydria. *J. A. M. A.*, 84:158, 1925.

5. Gompertz, L. M., and Vorhaus, M. G.: Studies on the Action of Histamine on Human Gastric Secretion. *Jour. Lab. and Clin. Med.*, 11:14, 1925.

Professional Building.

Discussion

Dr. S. W. Budd, Richmond: I am sure all of us are indebted to Dr. Davis for his masterful presentation of this subject and for the research which made possible this excellent paper. Dr. Davis has brought before us very forcibly a new method for the differentiation of the true and false achlorhydrias. This method, in my belief, will be of decided practical value in clinical medicine.

The presence of hydrochloric acid in the stomach, as we all know, is due to the activity of the parietal cells that line the glands of the stomach. These cells are curious little bodies. They are able to produce, from a practically alkaline medium, a substance of decided acidity. They react to outside influences, and sometimes will not work at all. Their activity may be started by psychic influences, by the so-called gastric appetite, or, finally, by the hormone known as gastrone. If they are in a mood to respond, they will secrete in answer to stimuli; if not, they will not secrete. These little cells are rather moody, and because of their moodiness, if you choose to use that term, there is a decided variation in the gastric secretion from time to time.

Gastric analyses, as a whole, have their limitation. We know that at certain times we expect one thing and get another, and *vice versa*. The variation is due largely to the peculiarities of these little secreting cells. An achlorhydria may exist today; next week you may have a hyperacidity. From a chemical standpoint gastric analyses are failures; from a clinical standpoint gastric analyses sometimes gives us some very leading information and sometimes some very misleading information. We hate to turn loose a gastric report, because we do not know whether the same report could be duplicated the next day.

The important thing that Dr. Davis emphasized in his paper is that histamine will stabilize the production of hydrochloric acid in the stomach. If that is correct, histamine will make gastric analyses more certain. A little histamine on an empty stomach will whip up these glands, stabilize the hydrochloric acid and make the analysis of more definite value.

During the last two or three years a great deal has been written about the appearance of achlorhydria as a means of diagnosing pernicious anemia. Only recently Minot has come out in a very dogmatic statement, saying that achlorhydria practically always means pernicious anemia, and he is giving all his achlorhydria cases the liver diet. So you see the importance of histamine in gastric analyses. If these glands cannot be stimulated by the injection of histamine, then we know we are dealing with a true achlorhydria, or *vice versa*.

Dr. Dewey Davis (closing discussion): I wish to thank Dr. Budd for his discussion of this paper. Several of his points might be followed up a bit. It has been stated by several observers that the agent which produces the continued flow of gastric juice during the digestion of a meal may be a chemical closely related to histamine.

As to the value of gastric analysis, I agree with Dr. Budd in many respects, and yet for a number of reasons we cannot do without them. The most

important reason, I think, is that the presence of achlorhydria is so often found in individuals in whom you would never suspect it, and the proper treatment of this condition makes such an important change in the patient's future health.

Recently I have had the occasion to analyze the histories of a large number of patients subjected to gastric analysis. From this analysis I have collected nearly 400 instances of uncomplicated achlorhydria. The majority of these individuals were seen before we began the use of histamine and probably many of them represent instances of dyschylia. A number of these patients with achlorhydria had pernicious anemia and a few subsequently developed the disease, but we cannot say that every case of achlorhydria is a candidate for pernicious anemia, although there is no method by which we may differentiate them.

The histamine test is very simple, and there is no danger attached to it. It can be used by any physician or technician, and it will produce acid secretion in the stomachs of all individuals whose glands are not entirely out of commission.

THE SIGNIFICANCE OF THE DILATED PUPIL IN ACUTE BRAIN INJURIES.*

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Considerable confusion may exist in the minds of many as to what importance is to be attached to unequal pupils in acute brain injuries. It is a sign that may have an important bearing on the diagnosis and treatment of these cases, and it should not be disregarded when surgery is anticipated. In the most superficial examination of a patient with a possible fracture of the skull, I do not know of any more frequent observation made than that of the condition of the pupils. In the majority of cases they will appear normal, but in a few, significant changes will be noted and proper interpretation is essential.

The size of the pupils may vary somewhat in different individuals, but generally speaking, they should be moderately contracted and of equal size. Barrie, in the examination of 326 recruits with apparently normal eyes, found inequality of the pupils of about 10 per cent. In the review of standard books on the eye, it was generally stated that the pupils are equal in normal individuals. In our experience when inequality of the pupils was found, there was other evidence of ocular or nervous system disease. With the exclusion of ocular disease, any difference in the size of the pupils is usually due to some interference with the nerve mechanism controlling the muscles of the iris. There are two efferent nerves controlling the pupil. The third cranial nerve supplies the circular muscle of the iris and paralysis of this nerve will give a widely dilated pupil which does not react to light. Stimulation of the third nerve will give a contracted pupil. The other efferent nerve is the sympathetic, and it supplies the dilator pupillae muscle. Paralysis of this nerve will cause a contracted pupil, and stimulation a dilated one. It must be borne in mind that the sympathetic has a rather long course. Starting in the cerebrum, it passes downward through the brain stem and cervical cord, to make its exit in the roots of the eighth cervical and first dorsal nerve roots, and then to the three cervical ganglia, finally again reaching the intracranial cavity through the sheath of the internal carotid artery, from which it passes to its destination in the eye. A lesion affecting these fibres anywhere in its course will influence the size of the pupil. The afferent nerve fibres start in the retina and pass into the optic nerve and optic tract to the external geniculate body and then to both oculo-motor nuclei. When light is thrown on the retina a reflex is started, the impulse passing along the afferent fibres to the nuclei of both third nerves and both pupils contract. When light is thrown into one eye that pupil will contract to light directly, and at the same time the opposite pupil will contract consensually. Any break in that reflex arc, whether it is on the afferent or efferent side, will affect the size and reaction of the pupil.

In acute brain injuries both pupils may be affected alike. This is especially true in the severe cases, as well as other conditions causing severe shock or collapse, when both pupils may be widely dilated and fail to respond to light. This condition usually calls for a grave prognosis and the patient rarely survives. It is not often that a patient can be saved when operated on under these circumstances.

Another condition of the pupils sometimes seen is hippus, or a repeated contraction and dilatation of the pupils when light is thrown on the eyes. Most text-books regard this as a functional condition. When it exists in acute brain injuries, it should be regarded as a disturbance of brain function. It has been observed in the progress of increased intracranial pressure, and in some cases no pressure seemed to be present. As an illustration, the following case is briefly summarized:

L. G., white, male, admitted to Memorial

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Hospital on July 22, 1923; discharged August 7, 1923. Automobile accident. Unconscious several hours. Abrasion and contusion in left frontal region. Bleeding from both ears and nostrils. Pupils were equal, but varied in size from pin-point to wide dilatation at brief intervals; reaction sluggish to light. This condition of the pupils lasted only a short time. Blood pressure 132/68; pulse 90. Vomited blood. Recovery was uneventful except for a right facial paralysis of the peripheral type.

Holman has recently emphasized the importance of dilatation and fixation of one pupil as evidence of localized intracranial hemorrhage. It is in this condition that the sign has more significance than in any other. We have found it to be a great adjunct in making a diagnosis of extradural hemorrhage. It may also be found in localized subdural hemorrhage, brain tumor or abscess. On the other hand, unequal pupils are not always found in extradural hemorrhage. We have seen and operated upon patients for extradural hemorrhage when the pupils were equal. In the majority of our patients with extradural hemorrhage, the pupils were found to be unequal and the hemorrhage was found on the side of the dilated pupil, with the possible exception of one case. This patient had equal pupils until just before the operation, when the pupil on the side of the hemorrhage was found to be a trifle smaller than the other, and this was questionable. This can be explained on the basis of an irritation of the third nerve causing a contraction which theoretically would precede a paralysis, giving a dilated and fixed pupil. Dilatation of the pupil on the homolateral side usually occurs during some stage of the progress of the hemorrhage. Frequent observations should be made or it may not be seen until the opposite pupil has become dilated and fixed as well. When the patient has reached this stage, he rarely survives. Therefore, one should never wait for the sign of the dilated or unequal pupils to make the diagnosis, or the patient may die of compression before it can be relieved.

G. H., white, male, aged 30, admitted to Memorial Hospital on July 31, 1926; discharged August 14, 1926. Had been hit by a pitched ball in left temporal region three hours previously. Temporarily unconscious, then got up and sat around the field. Became nauseated, vomited, had headache, aphasia and became stuporous. Blood pressure 110/60, pulse 50, respiration 16. Pupils at times contracted, then dilated; left larger than right; both reacting to light. No paralysis. Diagnosis:—Extradural hemorrhage, left. Operation: Large extradural clot removed from left temporal region, bleeding points controlled; local anesthesia. Excellent recovery.

It has been our experience to see a good percentage of patients with skull and brain injuries, have unequal pupils. Extradural hemorrhage was found in only about 10 per cent. The fact that a patient has unequal pupils on admission to the hospital, does not necessarily mean that he has an intracranial hemorrhage and should be operated on immediately. There should always be other signs, as those of increased intracranial pressure, before an operation is performed. A large number of these cases have been observed when no increased intracranial pressure existed. One could not attribute the inequality to a localized compression from a large clot. It is frequently seen in fractures of the base of the skull. The probable explanation is that it is due to some injury about the third nerve at the base. In fact, the third nerve has been found completely paralyzed in injuries about the base of the skull.

E. T., colored, female, aged 11 years. Admitted December 10, 1925; discharged January 7, 1926. Was struck by automobile; unconscious on admission and in shock. Pulse 100, blood pressure 70/40. Left pupil widely dilated and fixed, with ptosis and ophthalmoplegia except for downward and outward movement. Right pupil contracted and reaction normal. No paralysis. Bleeding from left ear. Compound, depressed fracture of skull, left posterior temporal region. Operation for elevation and removal of depressed bone. No increased intracranial pressure. Recovery uneventful except for complete third nerve paralysis on left, at time of discharge from hospital.

We have had patients with injuries of the optic nerve, followed by blindness and a dilated pupil on the same side, in fractures of the base of the skull. The cause of the dilated pupil in this instance is probably the break in the reflex arc, when the sensory fibres are blocked at the point of the injured optic nerve. The dilated pupil here does not react to light directly, but when light is thrown on the opposite eye, the pupil on the affected side will contract, due to the consensual reaction. The

injury to the optic nerve may be due to a depressed fracture about the optic foramen. In every case of injury to the optic nerve in fractures of the skull, roentgenograms should be made of the optic foramina, using the Goalwin technique to determine any narrowing or deformity of the optic canals.

G. W., white, male, admitted to Memorial Hospital on December 19, 1923; discharged January 14, 1924. Automobile accident. Temporarily unconscious; vomited. Contusion right maxillary, frontal and occipital regions. Bleeding from nose. Fracture of right superior maxilla and right frontal bone. Blood pressure 140/85, pulse 64. Right pupil dilated; did not react to light directly but reacted consensually. Left pupil contracted and reaction normal. Totally blind in right eye. Recovery excellent except for blindness in right eye.

Occasionally unequal pupils are observed, due to injury to the sympathetic nerve supply to the eye. Sympathetic paralysis gives the Horner syndrome, and it is typically seen in cervical sympathectomy. This gives a myosis, or a contracted pupil, and an enophthalmos on the same side as the lesion. One patient with an acute brain injury, with fractures of the skull and cervical spine, was observed to have had this syndrome.

Conclusions

1. When diseases of the eye can be excluded, unequal pupils should be considered as abnormal, and may have an important bearing on the diagnosis, prognosis and treatment of acute brain injuries.

2. Unequal pupils associated with increased intracranial pressure are strongly suggestive of an intracranial hemorrhage on the side of the dilated pupil.

3. Injuries to the oculo-motor sympathetic and optic nerves may cause unequal pupils, which should not be interpreted as a sign of hemorrhage, when there is no increased intracranial pressure.

Bibliography.

Barrie, T. S.: *Brit. M. J.*, 2:514; November 9, 1918.
Holman, Emile and Scott, Wm. M. J.: *J. A. M. A.*, 84:1329-1332; May 2, 1925.
Goalwin, H. A.: *Am. J. Roentgenology*, 17:573-579; May, 1927.

Professional Building.

Discussion.

Dr. Emory Hill, Richmond: This is a very important subject that Dr. Lyerly has introduced, but one which it is rather difficult to discuss, because we know so little about it. The eye doctor does not see these cases often. The anatomists know a good deal about brain anatomy, but there is a good deal we do not know. For instance, after all these years we do not know where the lesion is nor what it is that produces the Argyll Robertson pupil, though we see it clinically every day. I think it will take a great deal of investigation and checking up before we can make any very positive statements. I think the checking of the pupillary reactions would be of more importance than simple observation of the dilitation at any time. Sudden dilatation and fixation of the pupils would be an alarming sign, for instance, under an anesthetic. It is the favorite sport of anesthetists to look at the pupils. I do not know what they see except these dilated pupils. Of course, sometimes they drop ether in the eye; then the eye doctor sees those cases afterward.

A paralysis of the sympathetic or irritation of the sympathetic gives a combination of signs, so it is very hard to know with what we are dealing when a pupil is dilated or when it is contracted. The determination of injury about the optic nerve, in X-ray pictures for instance, is a thing that requires a good deal of caution. Nobody but Goalwin can measure the diameter of the optic foramina, and he misses it a good many times, as he himself confesses. It is an exceedingly difficult procedure. I think the observations Dr. Lyerly has made go a long way in telling us something about the significance of the pupils in head injuries. It will take more observations, and many more, but I think this observation in a rather unusual type of head injury will help. But it will take a great deal of anatomical knowledge before we can get very far in making dogmatic statements about the dilatation of the pupil in head injuries.

Dr. Lyerly, closing the discussion: I agree with Dr. Hill that it is not thoroughly understood what causes unequal pupils when there is a localized intracranial hemorrhage. It has never been determined whether it is due to stimulation of the sympathetic or paralysis of the third nerve. Personally, I believe it is due to paralysis of the third nerve, because the pupil is dilated and fixed. If the dilatation were due to sympathetic stimulation, reaction to light would still be present. Theoretically, one should expect the pupils to be equal in injury to the optic nerve, because of the concentric reaction. In a review of four hundred cases, there were four that had evidence of injury to the optic nerve. In every case the pupil on the blind side was slightly dilated, being somewhat larger than the pupil of the other eye. Whether due to an associated injury of the oculomotor or some other nerve, I do not know, but there was complete blindness and optic atrophy on the same side.

DRUG ERUPTIONS.*

By RICHARD W. FOWLKES, M. D., Richmond, Va.

There is need for sympathy when one realizes that the subject of Drug Eruptions is to be covered within our time limits. Morrow's[1]

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monograph in 1893 covers, classically, the subject up to that time. Since then excellent articles have appeared in this country by Wise, Fox, C. J. White, Abramowitz, Wile and others. This paper will be limited to the eruptions caused by the newer and more recent medicaments, among which are the entire series derived from barbituric acid as barbital, luminal, codeonal, adalin, medinal, amytal, and others as pyramidon, veronal acetyl, salicylic acid, phenolphthalein and the various arsenicals.

It is well to bear in mind at the outset that the term "drug eruptions" is limited to those skin lesions resulting from the introduction of drugs within the body, properly called dermatitis medicamentosa, and does not include the eruptions due to the irritant chemical action of drugs coming in contact with the skin. The latter class of eruptions are designated as dermatitis venenata, specifying in each diagnosis the actual irritant, as dermatitis venenata (sulphur), dermatitis venenata (ivy).

No definite explanation exists why an occasional patient responds abnormally to the action of a drug, with its resultant eruption, and others do not. We only admit our ignorance or, at best, try to conceal it with the terms idiosyncrasy or individual susceptibility. Some workers, Labbe and Hagnenau,[2] have claimed the eruptions to be allergic in nature and have desensitized patients to antipyrin. Abramowitz was unable to desensitize sufferers to phenophthalein or to obtain positive skin tests. Also unexplained is the fact that in the majority of cases the quantity of the drug ingested is immaterial, its effects on the skin being determined by the idiosyncrasy or susceptibility of the patient. Only bromide and iodide eruptions are excepted in this statement, these usually showing a measurable relationship between the quantity of the drug and the severity of the outbreak. It is further unknown why occasionally a susceptible patient may tolerate a large dose of the same drug without effect on the skin. However, usually this is not the case as one attack of a drug eruption seems ordinarily to increase the susceptibility of future attacks.

Clinically, the eruptions from drugs cannot be classified. Morrow said, in 1893, and it is still true, that "a classification based upon the anatomical form of the lesions produced by drugs is impracticable. The very multiformity of the lesions forbids any such attempt, for, while the irritant action of a particular drug may, in one individual, be manifested by a single elementary lesion, the same drug may produce in another individual eruptive elements of dissimilar forms."

The diagnosis is difficult due to these varying clinical manifestations, as pointed out by Morrow. It is a good rule to follow that one should begin to suspect an eruption to be due to drugs if it does not conform to a definite clinical type. Once suspicioned, the history should be taken very carefully and intelligently, for the public takes many popular laxatives, headache powders, sedatives, blood tonics and cough medicine, that were never ordered by a physician. The fact that the elimination of the drug brings about a normal return of the skin constitutes a cardinal sign in differential diagnosis. A return of the rash with further use of the drug further clinches the diagnosis if it occurs. Tests for the drug in the feces, urine, sweat, saliva, blood and skin may be of great help. These tests should not be overlooked, when feasible, because at best the diagnosis is difficult, since the clinical features have few distinct, definite or fixed characteristics. The eruptions of quinine and belladonna, if accompanied by fever, are almost impossible of differentiation from scarlatina rash on the first examination, and an iodide rash may resemble both smallpox and syphilis. Again, the recognition and consequent accurate diagnosis of drug eruption necessitates a familiarity with macules, papules, wheals, nodules, vesicles, bullae, pustules, furuncles, ulcerations and gangrene, all having been observed as a direct result of the ingestion of drugs.

It is well here to call attention to one of the most common lesions seen today in drug eruptions and characterized by its special appearance as a "fixed eruption". It is of long duration, starting as one or more smooth discolorations and varying in size. The lesions are polychromatic, slightly infiltrated, slightly if at all scaly, with a border that is ill-defined. Itching and burning are complained of. The eruption favors the normally hyperpigmented areas of the body, like the face, axillary, sacral and genital regions, and may or may not be accompanied by mucous membrane lesions. As pointed out, they may last for years and invariably flare up on trial doses

of the drug. The drugs causing these lesions will be referred to later.

In the treatment of drug eruptions, the main indication is to eliminate the cause and, if possible, aid in the elimination of the drug from the body. The few specific measures that exist for definite drugs will be pointed out when these definite eruptions are discussed.

Iodine-Iodides.—The eruptions produced by the ingestion of potassium iodide are the same as those produced by any iodine preparation. The lesions may be erythematous, urticarial, eczematous, petechial, pustular or bullous. The papulo-pustular form is the most common and typical of the iodide rashes. It appears most frequently in the areas where sebaceous glands are most numerous, as on the face, back, chest and shoulders, but may occur anywhere, and most frequently is acne like in character.

Iodide and bromide eruptions are frequently seen in breast-fed infants when the mothers are taking these drugs.

In the treatment of iodide lesions, Fowler's solution is given internally; eliminative measures are instituted and, with the cessation of the remedy, the lesions usually clear up quickly. However, Abramowitz[3] cites a case with nodular lesions over the entire body, present after taking the drug twelve years for asthma, in which six months were required before the entire disappearance of the lesions had taken place.

Bromides.—In general, these lesions closely resemble those of the iodides. Wile[4] recently has shown that decinormal saline solution intravenously brings about prompt improvement in bromism. He explains the action of the saline as due to a mass action of the chloride throwing the bromide into the blood.

Cinchona, Quinine and Its Salts, Cinchopen, Atophan.—These drugs cause different forms of eruptions; principally, however, they are erythematous, urticarial, hemorrhagic or pemphigoid in character. There are no reports that could be found of quinidin causing any eruptive phenomena since its recent revival for auricular fibrillation.

Digitalis and Its Derivatives.—Eruptions are rare from these drugs, but, when they occur, are usually morbilliform or scarlatiniform in character.

Mercury and Salts.—When these drugs cause eruptions, they usually begin on the extremities with redness, urticaria or edema. Later, if unrecognized and the drug continued, the eruptions may become universal. Accompanying the severe eruptions, we see high temperatures with stomatitis, and gastric, colonic, and nephritic symptoms.

Phenolphthalein.—Wise and Abramowitz,[5] in 1922, first called attention to the peculiar eruption caused by this drug. This is important because almost all the proprietary cathartics contain phenolphthalein as their essential ingredient. It is present in phenolax, ex-lax, partola, laxophen, prunoids, Boll's rolls, Rexall orderlies and many others. The lesions are classed as "fixed" eruptions, recurring in the same places on subsequent ingestions of the drug, and are similar absolutely to the description given above of these fixed eruptions. Phenolphthalein eruptions usually show deeper coloring, more markedly violaceous, than do these fixed lesions from other drugs. In addition, the skin lesions are often accompanied by vesicular, bullous and eroded lesions of the mucosae and genitals. These skin lesions are slow in disappearing after the discontinuance of the drug.

If phenolphthalein chancres occur not accompanied by the violaceous lesions on the skin, the differential diagnosis is difficult. Syphilis must be ruled out by repeated dark-field examinations, carefully made. Itching and burning usually are present. The history must be carefully taken.

Recent Synthetic Drugs.—Practically all the new synthetic remedies are capable of provoking eruptions in susceptible persons. They are mostly used as hypnotics and sedatives and since they have been recently introduced, their special and general characteristics are not yet well known. Most of them are derivatives of barbarturic acid.

Barbital and Medinal.—Barbital and medinal produce morbilliform, scarlatiniform blebs and "fixed" eruptions with frequent bullae and erosions of the pharyngeal and rectal mucosae. Weitz reported a fatal case in a girl of twenty-two with a morbilliform eruption, fever and swelling of the face after taking an unknown quantity of the drug. Death occurred two days later.

Codeonal.—Codeonal produces at times severely itchy, bluish red lesions of the fixed type on the face and chest. Adalin is known to cause pruritus and urticaria. Bromural

produces a pustular and tuberose dermatitis, as seen in the bromide eruptions.

Luminal.—Luminal causes a group of lesions which closely resemble at times the various exanthemata. It may so closely simulate measles that a differential diagnosis is impossible until the history is taken. The onset may be sudden, with temperature, injection of the conjunctiva and buccal mucous membrane, and desquamation may follow. Recently, in consultation, a case of luminal eruption was seen, showing a severe involvement of the conjunctiva, buccal, lingual and pharyngeal mucosae with marked edema of the pharynx, temperature went as high as 103°, along with lesions in the vagina and bladder. The dosage in this case had been small. This case cleared quickly after discontinuance of the remedy. Pyramidon, veronal, aceytl-salicylic acid, and antipyrin cause the same type of eruptions seen in luminal poisoning.

The action of these drugs is uncertain and fatalities may occur. Dubois reports a fatal case of erythroderma from luminal. The patient took .5 gram twice daily for four days. Abramowitz saw a fatal result from an overdose taken by an intoxicated patient. The Department of Health of New York City has stopped the sale of this entire group of drugs except by the prescription of a physician.

Bismuth.—Bismuth, recently introduced in the treatment of syphilis, caused a stomatitis which usually, if carefully watched, is preceded by a "bismuth line" on the gums. This is a deposit of bismuth sulphide in the subepithelial connective tissue. If the drug is discontinued at this stage, the stomatitis can usually be avoided.

Arsenicals.—Wise and Parkhurst[6] give a very detailed description and classification of drug eruptions from the newer arsenicals, including silver arsphenamine. Time does not permit here a detailed account because, to quote the authors, "the whole gamut of cutaneous lesions, from faint erythema to squamous-cell cancer, from mild freckling to deep-seated melanoderma, is included under the term arsenical dermatitis. Arsenical zoster is also included under this heading." These eruptions may be caused by any of the forms of arsenic, as Fowler's solution, arsenous acid, salvarsan, Asiatic pills, and others. The papular type of arsenical eruption may occur in scattered groups or unite to form larger patches. They are intensely itchy. At times this type may resemble lichen planus. Typical urticarial wheals, intensely pruritic, may follow any form of arsenic. Different forms of herpes zoster are not infrequent sequelae of this medicament. Greyish and brownish pigmentations follow occasionally the prolonged use of arsenic. Particularly in some of the chronic dermatoses, as psoriasis, should the patient be warned not to take arsenic over too long periods of time. Arsenical keratoses often occur with the later development of multiple prickle-cell epitheliomata on the sites of these arsenical keratoses.

Argyria from silver arsphenamine has been reported, but not authoritatively. Argyria from the use of silver salts used on mucous membranes or taken internally is not uncommon. Davis[7] reported two cases due to argyrol, in 1924, in the VIRGINIA MEDICAL MONTHLY.

BIBLIOGRAPHY.

1. Morrow, Prince A.: Drug Eruptions, in Selected Monographs on Dermatology, London. The New Sydenham Society.
2. Labbe and Hagnenau: Sensitization and Desensitization to Antipyrin. *Presse. Med.* 77:761 (Sept. 24th), 1921.
3. Abramowitz, E. William: Drug Eruptions, *Medical Times*, May-June, 1924.
4. Wile, Udo J., Wright, C. S., and Smith, N. R.: A Preliminary Study of the Experimental Aspects of Iodide and Bromide Exanthems, *Arch. Dermat. and Syph.*, 6:528 (Nov.), 1922; Wile, Ibid. 8:403 (Sept.), 1923. Wile, *J. A. M. A.*, 89:5:340 (July 30th), 1927.
5. Wise, Fred and Abramowitz, E. W.: Phenolphthalein Eruptions, *Arch. Dermat. and Syph.*, 5:296 (March), 1922.
6. Wise, Fred. and Parkhurst, H. J.: Drug Eruptions from the Clinical Aspect. *Arch. Dermat. and Syph.*
7. Davis, T. Dewey: Argyria, with Report of Two Cases Due to Argyrol. *Va. Med. Monthly*, 51:3:154 (June), 1924.

Medical Arts Building.

DISCUSSION.

DR. WILLIAM H. HIGGINS, Richmond: I do not think a paper of that kind should go by without recognition. It is not a paper for the dermatologist but a paper for the general practitioner—for those of us who are prescribing drugs from day to day. It is the first one of its kind I have heard in years. It is a very true one and drives home the great necessity of knowing more about drugs before we prescribe them so freely, as we did in the past. The syphilologists in the past have emphasized the dangers of arsenic, and now, since phenolphthalein has come in, we see the harmful effects of that drug not only on the skin but in colitis and other effects. I think all of us are most happy in hearing this paper today.

HYDROGEN-ION CONCENTRATION OF THE INTESTINAL TRACT.*

By W. RANDOLPH GRAHAM, M. D., Richmond, Va.

In the beginning I wish to beg forgiveness for presenting so technical a paper, but I trust all of you, and especially those interested in dietetics and gastro-enterology, may be able to make some practical application of its contents. The following is an abstract of a paper entitled "The Reaction of the Intestinal Contents of Dogs Fed on Different Diets," written by Dr. E. S. Emery, Jr., of Boston, Mass., and myself.

The chemical reaction of the intestinal contents is of interest for a number of reasons. Whether the tract remains essentially acid or alkaline would seem to be of importance from a bacteriological standpoint. Then, there is experimental evidence to suggest that the intestinal musculature may be influenced by the reaction of the chyme. Hammett has shown that the normal intestinal segment shortens, or contracts, with an increase of the hydroxyl-ion concentration, whereas Young produced the opposite effect, relaxation, with an excess of hydrogen-ions. Clinical observation would suggest also that various food stuffs exert their effects in part to chemical influences, as well as mechanical. Then again, the chemical process of digestion and absorption may very well be influenced by the chemical reaction of the contents.

Literature

A review of the literature upon this subject furnishes sufficient evidence that it has not been entirely neglected, although there is a striking dearth of satisfactorily controlled work where modern methods of hydrogen-ion determination have been employed. For the sake of orientation a brief summary of what has been done is presented at this time, beginning with the duodenum and proceeding anatomically.

Duodenum

For many years it was taught that neutralization of the acid chyme took place within a few inches distal to the pylorus, and that the intestinal reaction remained neutral or nearly so thereafter. There is at present, however, considerable experimental evidence to indicate that this is not always the case; that the duodenum may remain acid throughout its entire length. Grayzel and Miller made hydrogen-ion determinations upon the duodenums of thirty-two dogs. These animals were fed on a variety of diets. The nearest approach to alkalinity was found in six dogs that had been on a rachitic diet. The average duodenal P^H of these animals was 6.50. The average of ten dogs on a normal diet was P^H 5.91.

Long and Fenger studied the reaction of the intestinal content of man. One subject took the Rehfuss tube soon after breakfast and an hour later, with the tip about six inches below the pylorus, a specimen was obtained which gave a reading P^H 4.56. On the other hand McClendon, using modern methods, found the adult human duodenal content to be slightly alkaline. An examination of twenty-three samples of duodenal contents from month old babies led him to believe that the infant duodenum is more acid than the average acidity of their stomachs.

Jejunum

In the jejunum, as in the duodenum, the bulk of experimental evidence seems to point to an acid reaction of its contents. McClendon passed a Rehfuss tube on a healthy adult a distance of seven feet from the teeth. The average figures for each day showed the contents to become less acid as the tube descended. The greatest acidity was encountered on the first day, the nearest approach to alkalinity was recorded on the fifth day, P^H 6.2. During the same year, McClendon, Bissell, Lowe and Meyer had two other healthy men swallow over seven feet of tubing. There was a tendency for the material aspirated to become less acid from day to day. These findings led the authors to express the belief that the alkalinity of intestinal contents increases as one descends from the duodenum towards the ileum. Three years prior to this work, Long and Fenger, employing practically the same technique, found the contents to be slightly more alkaline. These observers appeared to place considerable importance upon the presence or absence of bile. Their experience led them to believe, if the end of the tube is just below the pylorus, the contents brought up may give a strongly acid reaction, whereas if at a slightly lower

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level, the pancreatic juice and bile, entering at the same point, may give a distinctly alkaline one because of incomplete mixing with the acid chyme. In the upper small intestines of ten dogs on a normal diet, Grayzel and Miller found the average reading to be P^H 5.99.

Ileum

On account of the relative frequency with which fistulae are encountered in the lower levels of the small intestine, the ileum early became the center for observations. In 1879, Ewald studied the material which issued from a fistula, probable situation in the lower third of the small intestine. The fluid had a slightly fecal smell. Its reaction was neutral or faintly acid, never alkaline. In 1917 McClendon, Shedlov and Thomson studied the contents of the ilea of seven pups all from the same litter. The hydrogen-ion concentration of these specimens ranged from 5.7 to 6.75. One year later McClendon, Shedlov and Karpman made similar observations upon adult dogs fed on a mixed diet of cooked food. No specimen was obtained less acid than 6.6. Grayzel and Miller in April, 1927, reported similar findings in the lower small intestine of dogs.

Colon

In spite of the ease with which colonic material may be obtained there is an astonishing scarcity of available data upon the reaction of its contents. In 1892 Jakowski reported a case of anus praeternaturalis from which acid material issued. Howe and Hawk during 1912 made hydrogen-ion determinations upon the feces of three men in a series of water drinking experiments. They found the reaction uniformly alkaline. Water drinking with meals had a tendency to increase the P^H. Pronounced changes in the dietary regime, such as high protein, low protein and fasting, did not effect the P^H sufficiently to cause other than small variations. Grayzel and Miller reported ten dogs on normal diets. They gave an average cecal P^H of 6.57. The remainder of the colon in the same dogs was P^H 6.84. These authors found that dogs produced alkaline feces while on a rachitic diet.

This work suggests that the kind of food eaten, other than a rachitogenic diet, does not influence the P^H. Yet, there are conflicting views upon this point. Moore and Rockwood, using litmus papers, litmus solutions and methyl orange as indicators, concluded that the alkalinity of intestinal contents is greater in herbivora than in carnivora, but feeding carnivora on carbohydrates would greatly increase the alkalinity. In contrast to this view it is interesting to note that, McClendon, Meyers, Culligan and Gydesen, two decades later, and using modern methods of hydrogen-ion determinations, felt that the more soluble carbohydrate there is present in the food of cats the more acid the intestine may become.

From the foregoing one gets the impression that the literature agrees in a general way that the intestinal contents are acid in the duodenum, and become progressively less acid on descending the tract. However, there has been little attempt to study the hydrogen-ion concentration under controlled conditions. Differences in the reports are, therefore, difficult to evaluate. This is particularly true of the work which has been done to show the effect of different foods upon the reaction. Then again, the literature published before it was possible to determine the hydrogen-ion concentration is of little value for accurate work. It therefore seems necessary to determine the hydrogen-ion concentration under known conditions, before it is possible to study the various elements that may affect it.

Experimental and Technic

For the present work adult male dogs were selected as the animals of choice. Dogs were chosen as their alimentary tract seems to simulate the human as closely as that of any animal, as well as for the ease with which these animals can be induced to take different kinds of foods. It was thought wise to use males to eliminate the possibility of pregnancy or estrus complicating the tests. Adult dogs were used because they are more stable than puppies and because it was thought they might be more apt to eat the various diets. The animals were healthy, and weighed between sixteen and twenty-three kilograms.

Two animals were fed on a mixed diet of cooked horse meat and white bread. The meat contained only a relatively small proportion of fat. Each dog was given approximately 350 gms. of meat and 100 gms. of bread daily. Water was allowed ad lib. This constitutes what will hereafter be termed the normal diet. Dog No. 1 had been on the above regime for several months. Dog No. 2 was fed the normal diet for two weeks. Dogs Nos. 3 and 4 had been

given approximately 350 gms. each of cooked horse meat daily for fifteen days. This with water constituted their entire diet and will be referred to as the protein diet. Dogs Nos. 5 and 6 were given aprpoximately 200 gms. each of white bread daily for two weeks. Bread and water was all they received during this period and constitutes the carbohydrate diet. Dogs Nos. 7 and 8 were put upon a diet of fat containing 200 grams of lard. They were also given 100 grams of bread to prevent acidosis. On the morning of the twelfth day of this regime animal No. 7 refused to take his food and was killed that afternoon. Dog No. 8 on the other hand took his daily rations readily and with apparently much relish. He was killed after having remained on the diet for fourteen days. Except for the bread diet the food was obviously not limited to one food product. But this never occurs in the diets of humans. A marked preponderance of one type of foodstuff, therefore, satisfied the conditions which were to be investigated.

All except Dog No. 1 were killed approximately twenty-four hours after a feeding. Other workers on this subject apparently have killed their animals or obtained their specimens within six hours P. C. For the most part material has been obtained within one to four hours.

McClendon and Sharp in 1919 showed that most foods have an acid reaction and in general they become slightly more acid on boiling. The present work was undertaken in an attempt to determine if a premanent change could be produced in the reaction of the intestinal contents by the feeding of protein, fat, or carbohydrate. In order to minimize the effect of the food itself, and at the same time observe a more permanent state of the intestinal content, it was decided to kill the animals on the day after a feeding.

The dogs were killed practically instantaneously by intravenous injections of ether.

In most instances the animal's heart was still beating when the abdomen was opened. Various intestinal levels were selected and immediately tied off between double ligatures, to prevent the movement of contents from one portion of the gut to another. Then, the entire intestinal tract, from pylorus to lower rectum was removed in one piece, and washed with tap water. The location of the ileocecal valve was estimated and a point on the external intestinal wall directly over it chosen as a center from which to measure the distances to the variously selected segments. Punctures were then made into the intestinal lumen of each previously selected segment, and the intestinal content expressed into test tubes containing water of known P^H. Whenever possible two specimens were obtained from the same segment for duplicate determinations. Within a period varying between ten minutes and one and one-half hours the material was transferred from the test tubes to centrifuge tubes, centrifuged, and the comparatively clear top fluid decanted into the reading tubes and tested colorimetrically.

A tabulation of findings shows quite clearly that no fundamental changes in reaction occurred with a protein, fat or carbohydrate diet. A composite curve would begin low in the duodenum with a P^H between 5.9 and 6.6, gradually aproaching alkalinity upon moving towards the ileum, reaching its height just proximal to the ileocecal valve. The terminal ileum was found to be uniformly alkaline or nearly so. Proceeding into the cecum and colon the curve again immediately drops to the acid side of neutrality. At 10 per cent of the distance from pylorus to ileocecal valve there was a difference of less than two-tenths between the P^H values of all curves. At 50 per cent of the distance the maximum difference of any two readings is less than one-tenth. There is no evidence from this work therefore to suggest that different foodstuffs will permanently change the hydrogen-ion concentration of the tract. It suggests that if feeding certain food substances tends to change the flora and a change in flora influences response of the tract, that it does not do so through influencing the P^H of the small intestine.

From a knowledge of physiology it seems that the reaction of the intestinal contents should depend on the relative proportions of its ingredients: foods, saliva, gastric juice, pancreatic juice, bile and succus entericus. As already stated, McClendon and Sharp showed that most foods have an acid reaction. Saliva is usually slightly alkaline, but gives such a faint reaction in either direction that it may be neglected. Gastric juice, is, of course, normally quite acid, being equivalent to .46 to .58 per cent hydrochloric acid. Starling in his Principles of Human Physiology states that pancreatic juice is markedly alkaline in reac-

tion, varying between tenth normal and seventh normal sodium carbonate. He further states "It is therefore about as alkaline as gastric juice is acid and it will be found that equal quantities of gastric juice and pancreatic juice when added together practically neutralize one another." During 1914, Drury, McMaster and Rous, while studying the relation of the reaction of the bile to experimental cholelithiasis, found the normal liver bile to be alkaline in reaction with an average P^H of 8.20. But in the gall-bladder, the bile becomes, on long sojourn there, strongly acid, its P^H ranging between 5.18 and 6.0. Our own determinations on specimens from the gall-bladder of five dogs were somewhat higher than those given above, showing an average of P^H 6.56. Both Howell and Starling agree that the succus entericus is distinctly alkaline in reaction. It is therefore not surprising to find that the upper intestinal levels were most acid, becoming gradually less and less so, as absorption takes place with a maximum of alkalinity in the terminal ileum. Let us consider in more detail the mechanism involved. Food mixed with acid gastric juice enters the duodenum. Here it comes in contact with at least slightly acid bile and pancreatic juice which is not quite so alkaline as gastric juice is acid. Therefore, due to the excess of acidity of bile and gastric juice over the alkalinity of the pancreatic secretion, one should expect to find the upper intestinal tract definitely acid in reaction. But as the intestinal contents move down the tract, undergoing digestion and absorption and mixing with the distinctly alkaline succus entericus, it is only reasonable to expect the content to become less and less acid. On this hypothesis, material which reaches the terminal ileum should contain relatively less of the acid elements and more of the alkaline ones than at any higher level. By this sort of mechanism we are able to account for the alkaline content observed in the final 80 to 95 per cent of the distance from pylorus to cecum.

One other point may be of passing interest. For the most part the P^H of the upper tract approaches fairly closely to the P^H of bile. Starling's observation that the concentration of the pancreatic and gastric secretion are such as might tend to nullify each other lends some support to the possibility that the bile may be the dominating factor in the intestinal acidity.

Summary and Conclusions

Previous work done on the reaction of the intestinal contents has been unsatisfactory in that much of it was done before accurate determinations of hydrogen-ion concentration could be made and because of a lack of controlled conditions.

The present study was undertaken to determine the hydrogen-ion concentration of all portions of the tract simultaneously, and to determine whether the feeding of a preponderance of one type of food product would change the reaction.

Two dogs were fed diets considered normal for these animals. The others were given a preponderance of protein, fat, or carbohydrate for two weeks and then killed instantaneously twenty-four hours after eating and the tract studied immediately.

All showed about the same thing. The P^H ranged from 5.9 to 6.6 in the duodenum. Thence it became gradually more alkaline as it approached the ileocecal valve to become more acid in the cecum. This agrees for the most part with the results obtained by Grayzel and Miller except that they found the contents of the cecum to be more alkaline than in the terminal ileum. We have no explanation for these divergent results.

Our results suggest that the reaction of the upper intestine is acid as the result of the hydrochloric acid and bile, and becomes less so as the alkaline succus entericus becomes the more dominant factor. There is no evidence from our results that two weeks' feedings of different food substances influence the hydrogen-ion concentration of the intestinal tract.

Discussion

Dr. Warren T. Vaughan, Richmond: Perhaps the most striking fact brought out in Dr. Graham's discussion is that we must reconstruct our conceptions of the physiology of digestion, as of all other aspects of physiology, with the development of new methods of study. Indeed, it is rather remarkable that in therapy we have gotten what results we have when so much of our information has been misinformation. Of course, the earlier work which tended to show that the intestinal contents were alkaline throughout was done with dyes which changed color at different hydrogen-ion concentrations, and the later work has had to await new methods for more accurate study. Of course, this in turn is not the final work. The conception that the bile is alkaline, that the duodenal contents are alkaline, must be changed; yet, as I have said, the results of therapy, based on past knowledge, have been remarkably good. Looking over even recent books on dietetics, it is really amusing how the diets proposed for specific diseases are often devoid of a rational basis. Scarcely a year elapses but that we must reconstruct some of our dietary conceptions.

A STUDY OF THE HISTORIES OF ONE HUNDRED CHEST CASES.*

By GERALD A. EZEKIEL, M. D., Richmond, Va.

The diagnosis of pulmonary tuberculosis is always a live subject. We have certain time-honored symptoms, groups of symptoms, and teachings about tuberculosis, which have existed for many years without question as to their still being true in the face of modern and more recent discoveries; so it occurred to me that a study of a good number of charts from the chest clinic with an analysis of the findings might prove of interest. It had been my intention to review several hundred charts at least, but by comparison of the relative percentages of the first fifty analyzed with the second fifty, I found they ran about the same, so concluded to base this study upon one hundred cases presenting themselves for diagnosis at the Richmond Tuberculosis Clinic of the Health Bureau.

Out of the one hundred cases, twenty-four gave a history of tuberculosis in the family and one-half of these patients, that is twelve, had active tuberculosis. In one of these active cases, the patient did not give a single symptom, but came for examination on account of contact with a member of his household who had tuberculosis. Physical examination revealed definite findings of active tuberculosis in this patient, which were confirmed by X-ray examination.

The details of exposure were not stated very definitely, but in this group those examined were, for the most part, contact cases who were urged to come to the dispensary by the visiting nurses. It will be seen that approximately one-fourth of the patients gave a history of tuberculosis in the family, and that of these, 50 per cent had tuberculosis. From these figures it would seem that this is certainly a point well worth taking into consideration in history taking. Equally important is exposure to tuberculosis in the course of work or wherever there is continuous contact.

Fifty-one of the patients were classified as tubercular, forty of them being active cases and eleven arrested. Forty were classified as non-tubercular and nine were not diagnosed, as they came to the dispensary only one time, and did not give ample opportunity for study. The active cases were:—parenchymal, twenty-six; parenchymal with cavitation, eight; chronic fibroid, three; and tracheo-bronchial, three.

Eleven positive sputums were found in the forty active cases. It is always our routine to give at least three sputum test bottles to every patient, and in some instances as many as nine different specimens of sputum were examined. I do not feel that it is at all necessary to obtain a positive sputum in order to make a diagnosis, and I might say that we should never wait to make a diagnosis on sputum examination, because in a great number of cases, while waiting, we would lose most valuable time. Nevertheles, if sufficient number of specimens are examined, it is surprising how many times we will have bacteriological confirmation of the diagnosis.

Twenty-seven cases in this series gave a history of hemoptysis, and twenty-four of these were diagnosed tubercular. In two cases the hemoptysis was due to caries, and in only one instance was the case regarded as non-tubercular. There was no other single symptom occurring in such a high percentage of the positive cases. The old teaching that hemoptysis must be regarded as tuberculosis until proven otherwise, should still be adhered to; but we must also recognize the possibility of blood coming from some other source, especially dental caries. In tracheo-bronchial tuberculosis, we can readily see hemoptysis might be present with very slight involvement. Blood can come from a superficial gland that has ruptured or is undergoing degenerative process. Of the three cases reported as tracheo-bronchial, one was of this type.

A history of cough, tiring easily, producing expectoration, pain in the chest, slight elevation in temperature, together with loss of weight, and night sweats, in every instance meant a positive case, but where only two or three of the symptoms just mentioned occurred, definite diagnosis was only made in about half the cases. In eleven cases in this series where the majority of the above symptoms were given, it would practically have been possible to make a diagnosis on symptoms alone.

Chronic foci of infection must be thought of in cases having only a few of the above symptoms, and although I pay particular attention to pulmonary diseases, nevertheless, in passing, I want to call attention to these low grade chronic infections so commonly overlooked, but quite important in general diag-

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, at Petersburg, Va., October 18-20, 1927.

nosis, and as co-existent conditions with tuberculosis. Many times it is necessary to clear up a focal infection before we can get results in the treatment of tuberculosis.

No attempt has been made in this study to classify the cases according to the standard classification of using the numerals one (1), two (2), and three (3), and the letters A, B, and C to denote the amount of involvement and the severity of the case. The clinic is mainly diagnostic. A case is pronounced tubercular or non-tubercular, and, if advisable, is referred to a sanatorium for treatment.

There were eight cases in which cavitation had taken place, that is, in one-fifth of the active cases. I have been working in this clinic for nearly twenty years. The cases presenting themselves nowadays, for the most part, require careful study, physical examination and X-ray in order to arrive at a correct diagnosis; whereas, in my earlier experience, a greater number of far-advanced cases that were easily diagnosed applied for examination without any very definite idea that they actually had tuberculosis. It is surprising, then, to find one-fifth of these patients with cavities. In half of these, the cavities were only found upon X-ray examination. Formerly, I felt chagrined to think that a cavity was present and I had overlooked it. Bendove, of Denver, recently wrote an article on "Silent Cavities." He states that about 50 per cent of cavities are silent or relatively silent. The absolutely silent or mute cavities give no physical signs. This, he thinks, is due to complete blockage of an afferent bronchus with a plug of mucus or closure by fibrotic changes. No air enters the cavity and no sounds are produced. The relatively silent cavities give adventitious sounds. These are produced by the character of the lining, ragged tissue and retained secretions. It is of further interest to note the value of this in making a prognosis. The absolutely mute cavity with clear cut walls, well encapsulated, gives a better prognosis than one with ragged walls. Bendove further says that in any portion of the lung below the second rib where for a limited area definite rales are heard in abundance, we should be suspicious of cavitation and check up by roentgenogram. Dunham and Hayes claim that all known shadows that have been checked up at necropsies have been proven to be cavities and are not due to pleural adhesions.

Three out of the forty active cases were classified as tracheo-bronchial. This diagnosis is largely made from X-ray findings. This is a type of tuberculosis somewhat more under discussion at the present time. Krause advances a theory, which is rather rational: dust and infections that are inhaled first come to rest in the alveoli and terminal bronchioles, as these portions of the pulmonary air passages are the only ones that do not possess cilia. Bacilli arriving in the lung through the blood stream embolize in the smaller vessels and the consideration from this point is the same as for air-borne organisms. The increase in lymphatic apparatus in the lung parallels the course of lymphoid tissue elsewhere in the body. This system becomes more or less impermeable due to its increase and taking care of dust, so that the lymph channels are blocked and the natural centripetal tendency of foreign particles is inhibited; consequently, there is more likelihood of peripheral involvement of the lungs in adults. If Krause's theory is correct, it would then seem reasonable to expect to find more hilar tuberculosis in adults living in the country or those that have spent the greater part of their lives there, as freedom from dust would leave the lymph channels more open, and result finally in the deposit of infection in the tracheo-bronchial glands.

Discussion.

Dr. Dean B. Cole, Richmond: Dr. Ezekiel's observations, though based on a rather small series, parallel very closely those of men who have made studies of histories of large series of cases. My personal impression is that symptoms are leading and may be most misleading. Particularly is this true of dispensary cases, first, because of the type of case you get, and, second, because these cases are selected and brought in by nurses to some particular dispensary because they have suspected some particular condition—in Dr. Ezekiel's case, tuberculosis—and the symptoms the patient gives will most likely be those of that disease, and we have to check very closely or we may be misled. There are only two symptoms which I feel are definite—one, pleurisy with effusion, and the other hemoptysis. Those two must be construed as tuberculosis until proven otherwise.

Histories, I think, are very valuable, but they, too, may be misleading. Frequently a history is more valuable when you look back upon it than it is when you are trying to make a diagnosis.

I believe the X-ray is absolutely indispensable in lung diagnosis. The X-ray is valuable in diagnosis, prognosis and treatment in tuberculosis, just as the electrocardiagraph is in the diagnosis and prognosis and treatment in heart disease.

Dr. R. L. Raiford, Franklin: I want to emphasize one point Dr. Ezekiel brought out when he said lots of his cases did not respond to the usual treatment for tuberculosis when they had some chronic focus of infection. A few years ago I was helping

in one of the tuberculosis clinics down in our county and noticed during the day's work the clinician had found only three or four cases frankly positive. He was telling many others who had come on account of the symptoms enumerated on the posters that had been stuck around, that they had better have the teeth or tonsils looked after, or some symptoms of sinus infection investigated. It is quite true that these foci of infection may cause symptoms that suggest tuberculosis, so why not have them corrected early before our patients become so weakened that they may succumb to tuberculosis or some other disease?

NEPHROSIS.*

By J. S. DAVIS, M. D., University, Va.

The term Nephrosis was first used by Fr. Muller in 1905 and, although later adopted by other writers, notably Volhard and Fahr, much added interest has been stimulated in this country by the publications of A. A. Epstein, of New York, in 1917 and later. We are deeply indebted to Epstein for his scientific work and elucidation of the condition. I too felt the difficulty, quite widely denounced, of forcing all renal disorders into the simple categories described in text books even until recently. There occurred in every one's experience cases of so-called Bright's in which the urine was atypical and the course sometimes more favorable than was expected. I recall two conspicuous instances of complete recovery from conditions that I had held out no such hope of, which surprised and gratified me so greatly that I suspected another character of lesion not contemplated in the current classification.

Nephrosis has several synonyms, most striking of which are Diabetes Albuminurica and sometimes amyloid kidney; the latter phrase I used in the cases referred to, as the urine corresponded to text book pictures of that condition. Dr. Epstein in his paper of 1922 summarized the clinical picture of nephrosis as follows:—A chronic condition in relatively young persons of gradual onset and protracted course with general anasarca and effusion into serous cavities, oliguria, marked albuminuria and occasional cylindruria with high specific gravity. There is no increase in blood pressure, no cardiac hypertrophy and no marked increase in blood urea. Positively there is a great increase in the cholesterol content of the blood, a reduction in the total protein of the blood serum, with inversion of the normal ratio of albumin to globulin. It is not primarily a kidney disorder, but presents a metabolic disturbance of nutrition probably related to hypothyroidism. Anatomically the lesion is in a pure case, confied to the convoluted tubules, whose epithelium can regenerate, though the glomeruli may participate in some cases, thereby rendered far more serious. The causes are obscure, but mainly chronic infections. The edema is due to loss of protein from the blood serum as shown in the so-called "war-edema", when starvation was a large factor. The dietetic treatment is based on this—a high protein, fat free, carbohydrate poor diet in striking contrast with the classic nephritic regimen. It increases the osmotic force of the blood. It does not increase the albuminuria as formerly thought. Thyroid gland treatment assists greatly, based upon the idea that the disease is metabolic and that thyroid secretion is the lacking substance, though Liu denies that this relationship is proven.

There appeared at the University of Virginia Hospital in May last a case that seemed typical and whose course has been so striking and variable that its study became one of fascinating interest. Before taking it up, however, I desire to mention in a little more detail a case already alluded to and cared for on our wards, that in retrospect seems very similar and dates back to 1911, before Epstein had expressed himself in print on the subject, and that disturbed my confidence in the current classification.

There was a young girl, sixteen years old, who entered the University of Virginia Hospital, on September 13 of that year, complaining of "kidney trouble" of at least six months' duration. She was very edematous, her systolic blood pressure was 115 mm. and her heart was not enlarged. The urinary output was scanty and averaged 400 c.c. per diem with specific gravity 1.025. It was acid and contained a large amount of albumin, but rarely any casts or other significant sediment. No blood chemistry was done unfortunately, as it was not a routine matter at that remote time. She had a slight goitre, which had been larger and was treated with iodine locally. Iodide of iron and nephritic diet were administered. She remained ten days and returned home. She broke over the diet and I lost sight of her for four years. She then returned with an unjustified suspicion of tuberculosis of the lungs, but entirely well of the kidney trou-

*Read by invitation before the Pittsylvania County and Danville Medical Society in Danville, Va., September 13, 1927.

ble. No albumin and no edema. She had eaten what she chose, but kept up the iodine for her goitre, which is in line with Epstein's view of the thyroid relation of nephrosis. She has since married and is a flourishing multipara without any pulmonary or renal disabilities. No scientific chemical work was done on this ancient case, but its course and outcome are suggestive.

There was in our hospital this summer an almost typical case, which has fluctuated between life and death for a long time, raising and dashing our hopes with lightning rapidity, though it now seems to be on the road to recovery. He is a young man, 32 years of age, who entered on May 31, 1927, complaining of weakness and swelling. This had been going on for six weeks, when headaches supervened and his feet swelled excessively. His physician thought he had acute nephritis, as the urine contained a little blood, as well as much albumin, though there were rarely casts of any kind but some fat globules were noticed. Heredity was not significant, nor had he had any serious illness, except a suspicion of tuberculosis of the left knee at nine years of age and "blood poisoning" two years ago after an infected wound of the left forefinger. He gave a history of apparent recovery after ten days in bed and went to work, but never felt well and finally developed the trouble which brought him under my charge. He was a pale young man, 32 years old, four years married with one child. For the last year his health had been poor, but he kept at work until six weeks before, when headache and languor drove him to the doctor. His feet began to swell and soon involved his whole body. There had been no nausea or vomiting, but the urine was scanty, highly albuminuric and contained a few blood corpuscles. Physically his head, neck and eyes were negative and his teeth poor. His chest had scattered rales and some fluid in the right side. The edema was marked from the hips down and there was a little ascites. The genitalia were terribly swollen.

The daily urinary output was 500 c.c. on arrival and contained much albumin. Specific gravity 1.030, acid. There were a few white and red cells and some hyaline casts which soon disappeared and fluctuated often. Blood urea was 80 mg. per 100 c.c. and remained at that figure for several weeks. Blood pressure never exceeded 122-80. Blood cholesterol was 640 mg. per 100 c.c., over three times the normal. Albumin-globulin ratio was 1:2, exactly the reverse of normal. Blood calcium was 9 mg. per 100 c.c. and Wassermann negative. Phthalein output 5 per cent in 2 hours. Blood looked milky.

The condition was accordingly recognized as nephrosis on account of the relative youth of the subject; low blood pressure, moderate increase in blood urea, and inversion of the albumin-globulin ratio, with the highly albuminuric urine without much morphological sediment, except lipoids. The great dropsy too was a feature. Epstein, as stated, considers the edema due to albumin starvation and therapeutically tried to relieve it by a special diet high in proteins, low in carbohydrates and very low in fats. He gives the following choice of foods: Lean meat, lean ham, white of eggs, oysters, gelatine, lima beans, lentils, split peas, green peas, skimmed milk, coffee, tea and cocoa. Fluids of 1,500 c.c. allowed and salt enough to render food palatable. This regimen was followed.

The thyroid association of the first case and its favorable outcome corroborates Epstein's view and accordingly we administered thyroid extract gr. ½ t.i.d., which we increased to 1 gr. with better effect for some time. Sweats and diuretics (Theocin and Novasurol) with little or delusive improvement were tried for some time. Urinary output once went up to 1,500 c.c., but rapidly fell to 250 c.c. Appetite remained fairly good, but sometimes he vomited several accumulated meals and professed temporary comfort. Matters fluctuated, as did our courage, until nearly the end of July, when we were having to give opiates at shorter intervals, and then in desperation Novasurol was tried again with ammonium chloride gr. xv t.i.d., which caused a tremendous diuresis up to 5,900 c.c., with a corresponding reduction in the edema.

As the fluids were resorbed he suffered much pain in his muscles and the ascites and hydrothorax disappeared.

He was always too ill to take his basal metabolism, so that we have no scientific check on that aspect of the case.

As edema subsided there was marked mental disturbance, excitability followed by depression, and one day he tried to jump out of the window. We were at this time getting him off of narcotics, which may partly account for the psychic disturbance. Shortly before his discharge he developed pain in his right chest

and a pleural rub was found, which soon disappeared. On discharge, August 27, he was perfectly normal mentally and his edema had entirely disappeared.

His daily urinary output was 1,800-2,000 c.c. with a very small trace albumin. Blood cholesterol 246 mg. per 100 c.c. Ratio albumin to globulin in blood 2:1, exactly reverse of early condition. Blood urea was 32 mg. per 100 c.c. of blood and phthalein kidney functional was 45 per cent.

Diet consisted of 150 grams of proteins, 300-400 grams of carbohydrates and low fats, which he was told to continue. If genuine glomerular nephritis complicates the picture, proteins must be limited to basal requirements plus the amount lost in the urine.

His emaciation was extreme, but he was regaining strength rapidly. He was told to stay in bed most of the time and return this month (September) for observation. This is a remarkable case that looked desperate many times, but now it is hoped is on the road to recovery, vindicating the views and therapeutics of Epstein, though Liu questions the thyroid relationship and claims the rise in metabolic rate due to thyroid administration which increases blood proteins and reduces cholesterol. He cites many instances when it has been helpfully used in nephritis.

I desire to make my most grateful acknowledgments to my colleagues, Dr. H. B. Mulholland and Dr. W. E. Bray, for invaluable assistance and laboratory work in this case.

BIBLIOGRAPHY

Epstein. Further Observations on the Nature and Treatment of Chronic Nephrosis. *Am. Jour. Med. Sciences.* February, 1922

Epstein. Thyroid Therapy in Chronic Nephrosis. *Jour. A. M. A.* September 18, 1926.

Liu. The Effect of Thyroid Medication in Nephrosis. *Archives Int. Med.* July, 1927.

McElroy. Nephrosis. Tice's Practice of Medicine.

DIAGNOSIS OF CHOLECYSTITIS.*

By JAMES H. SMITH, M. D., Richmond, Va.
Department of Medicine, McGuire Clinic.

There are cases of gall-bladder inflammation with symptoms and signs so typical that, together with jaundice, they may be said almost to hang out a yellow flag. For these we know that surgery is indicated, and their diagnosis requires but little discussion among practitioners of medicine and surgery. If I seem to stray into the field of treatment, it is because it is of no advantage merely to label a condition with a name. It is, indeed, always well when we can, to consider diagnosis in terms of action. So far as we fall short of this, we fail in diagnosis in the sense of the Greek from which the word is derived,—we do not know all the way through the disease to the point where we are ready to say what we are going to do about it.

The typical case, leading direct to the operating room at the earliest favorable time, is more often a woman than a man, middle-aged or beyond rather than younger, fat, rather than thin, a multipara instead of a nullipara. But any or all of these factors may be reversed. There is usually a history of pretty constant and rather chronic indigestion; abdominal pain often occurring in severe paroxysms, but again constant and nagging, and it may or may not be referred to the region of the right shoulder. In the septic type there will be fever, usually recurrent, often with chills and leucocytosis. If the common bile duct is obstructed, there will be jaundice and probably fatty or clay-colored stools. If jaundice tends to recur with colic, it suggests a ball-valve blockage of the duct by stone. Occasionally a distended gall-bladder is palpable. If a majority or respectable minority of these are present, and if in addition tenderness and perhaps rigidity can be elicited over the gall-bladder area, one feels reasonably sure that the trouble is cholecystitis, with or without stones, and that operation is required.

In reaching this conclusion, the diagnostician has satisfied himself of three things: That the patient has cholecystitis, that the degree of trouble experienced from it has not been slight, and that there are so serious objections to seeking surgical relief.

There are several special lines of investigation that tend to confirm the diagnosis of cholecystitis. There are others that may tend to correct a false impression as to its presence—in other words, aid in the differential diagnosis. There is still another, laparotomy, that tends to confirm or refute, as the case may be. These three headings will be discussed in reverse order.

Laparotomy may be justified even though the diagnosis of cholecystitis is unestablished, if the indications are reasonably plain that the trouble is intra-abdominal, requiring surgical relief. The patient then suffers no harm pro-

*Read before the forty-fifty meeting of the South Piedmont Medical Society, Danville, Va., November 15, 1927.

vided the incision for supposed gall-bladder trouble is favorably located for finding and dealing with the actual pathology. The very best surgical judgment is not competent always to distinguish appendicitis and cholecystitis, even with all the available special diagnostic data at command. And if there is a pretty good chance of either or both, the appendix cannot be trusted like the gall-bladder through the acute emergency. However, gastric and duodenal ulcer should have been excluded by roentgen-ray examination. If X-ray shows ulcer without marked stenosis and not perilously near perforation, laparotomy should be withheld unless there is evident cholecystitis or pathology additional to ulcer. Even with the abdomen open, most surgeons, I think, are now satisfied to deal with cholecystitis or other pathology and leave astenotic, non-perforating ulcers for medical treatment.

When possible, differentiation should be made before operation between cancer of the gall-bladder and cholecystitis. The former, unlike cancer of the liver, is not rare as a primary location. Courvoisier's law is not conclusive. It is not even helpful unless one can remember it better than I can. It deals with large and small gall-bladders, intermittent and progressive jaundice, gall-stones and cancer. Perhaps the emphasis belongs on progressive jaundice, with cachexia, as suggesting cancer. But here again the practical surgeon is not much disturbed, provided he has been sufficiently wise to guard against a disappointing surprise. Even though the abdomen is opened and cancer of the gall-bladder or head of the pancreas is found, an operation has been done which most patients would not be willing to die without.

Chronic and acute pancreatitis are often combined with or indistinguishable from the corresponding affections of the gall-bladder. As regards chronic pancreatitis, no practical consideration of moment is involved in the preoperative recognition. I have thought that, theoretically at least, an operative finding of pancreatitis would require the surgeon to consider drianage of the gall-bladder rather than removal. But, I do not know how far surgeons are in agreement on this point. There was a time when considerable hesitation was felt in operating on the gall-bladder of diabetics, even though it was believed to be inflamed and probably accompanied by a chronic pancreatitis, the latter possibly responsible for the diabetic state. Now that insulin is available, the niceties of this question are not so important, and the diabetic with cholecystitis may be prepared for operation with fair confidence. The cholecystitis may be relieved on its own account, and if the diabetic tendency is not benefited, the operation, nevertheless, is not attended by so grave a risk as formerly. With regard to acute pancreatitis, and whether or not important considerations are involved in differentiating it from acute cholecystitis, I think the surgeon's attitude would be the same toward both, to practice conservatism during the acute stage unless invasion of the peritoneum demanded intervention.

It is true the diagnostics of laparotomy should be limited as much as possible by accuracy in pre-operative diagnosis. But every experienced practitioner will admit that it is the laparotomy that is justified by no abdominal findings that is the late, lamented field for pre-operative differential diagnosis of cholecystitis. The more important of the conditions evolving this awkward situation will be briefly referred to.

A jaundice of recent origin, out of proportion to other symptoms, may be simply a catarrhal jaundice. Infective jaundice is apt to show itself in mildly endemic form. Weil's disease, due to a spirochete, is rare in this country.

Syphilis of the liver, while usually more like cirrhosis, may simulate cholecystitis. The Wassermann test should routinely precede gall-bladder operations. The blood reaction may be relied upon with more confidence than in locomotor ataxia, which also, in its so-called gastric crises, leads to mistaken diagnoses of cholecystitis. The Argyle-Robertson pupil and absent reflexes should be routinely examined for. If these or the history are suspicious, a more complete neurological examination should be made and lumbar puncture done. Other affections of spinal nerve roots may give a similar distribution of pain.

Lead poisoning may easily be overlooked, but less probably so if the gums are inspected for lead line, and the routine examination of the blood is made with an eye to abnormalities of the red cells,—in this case, stippling.

In this connection, malaria and cholecystitis sometimes require careful differentiation.

Beginning pneumonia may resemble acute gall-bladder inflammation, but no serious error in therapy is likely to be committed before the nature of the trouble becomes clearer.

On two counts, the frequency of mistakes and the disaster sometimes involved, angina pectoris is included in the differential diagnosis of gall-bladder disease. We shall not take the time to detail the subjective and objective phenomena which would suggest that, cholecystitis or not, the circulation must be considered in differential diagnosis, or in treatment advised. One should not be deceived by the presence of moderate fever and leucocytosis, as these are characteristic of coronary thrombosis and myocardial infarction. Tenderness below the ribs may be that of passive congestion of the liver rather than gall-bladder inflammation.

The right kidney may be a source of confusion. Inflammations of the two organs at times run closely parallel in symptoms and signs, as do also the pain and clinical course of calculi. It may be difficult to say whether a palpable tumor is an enlarged gall-bladder or the right kidney. The more special lines of investigation of the kidney will not be reviewed; those applicable to the gall-bladder will now be considered.

Determination of gastric acidity should be made as part of the diagnosis of cholecystitis. It will not tell the condition of the gall-bladder, but it may tell of a gastric need due to the gall-bladder whether operation is done or not.

The Meltzer-Lyon test, permitting the stomach tube to remain and pass through the duodenum, with the administration of salts to facilitate relaxation of the sphincter and collection of biliary products from the duodenum, is a procedure I have had little experience with. I became discouraged in its practice too early to claim to have given it a fair trial. I do not expect to see much revival of faith in A bile and B bile, though it does seem that faithful study of the bacteriology of the collected specimens should prove of value in some cases.

With regard to liver function tests, after two years' use of one of them, it is disappointing to come to the tentative conclusion that they are not greatly helpful in the diagnosis of cholecystitis. With my associates, we have used the dichromate icterus index, selecting it as perhaps the most reliable and simple. If jaundice is present we do not need it. Cholecystitis often does not raise the index. In its middle ranges, where it would be expected to be most helpful, rarely have we found it to lead to recognition of cholecystitis, or of much value in confirming the diagnosis. It has its uses, as, for example, in watching liver function during arsphenamin therapy.

Cholecystography, by means of the Graham salts X-ray study, is doubtless the most distinct advance made in recent years for the clinical study of gall-bladder pathology. My associates prefer the method of oral administration, accepting its lesser certainty for its greater safety. Dr. Tabb is just now preparing an analysis of the results of this method of examination at St. Luke's Hospital in the past three years. His figures accurately correlate the X-ray reports with findings at operation and pathological examinations. I shall defer to his statistical study when it is ready. The statistical data will, however, necessarily be limited by the following conditions:

If the diagnosis seems to be established without this examination, it is omitted on account of expense and inconvenience to the patient.

A considerable number of cases reported positive or probably positive have not been operated on. The reasons these cases have accumulated are varied and will be brought out presently. The one that pertains directly to the test is, that, we do not feel that we have had enough experience with the method to lead us always to make a positive diagnosis, even though it is, of course, true that there was some suspicion of cholecystitis on clinical grounds before the X-ray examination was requested. This attitude does not rest on failures to find the report confirmed at operation, but is merely an instance of conservatism, possibly exaggerated. At any rate, when the report describes the presence of stones, we are diagnostically satisfied. Occasionally a stone may be missed, and, on second examination, "caught."

Cholecystitis presents one aspect on which I have vainly sought enlightenment for some time. There are not lacking authors and teachers who are willing to commit themselves to the idea that the gall-bladder should be considered as a focus of infection, just as much as the tonsils, teeth or other culprit more easily taken. But there is lacking any conclusive data as to its actual guilt and the results of attacking it. In dealing with chronic

arthritis, the usual course of events is about as follows: The tonsils and some teeth are removed; the sinuses, prostate or cervix are examined and pronounced negative or dealt with if considered infected. Likewise, other possibilities,—the vaccines are tried. The arthritis persists or progresses and intestinal toxemia with absorption is hit upon as the offending element. Our unequal efforts are then directed against the alimentary tube. The question for which I have no answer is: How much of the supposed intestinal toxemia is symptomatic of gall-bladder infection, and what would be the results on the arthritis if the gall-bladder were removed or drained? It is not a pure question. Though variously involved, it is sufficient to point out that the gall-bladder is only a bulbous backwater in a large system of hepatic ducts; cholangitis often complicates cholecystitis, and the results of gall-bladder operations are not always all that could be wished even when the operation is for relief of symptoms directly attributable to the bile tract inflammation.

There is an argument against the gall-bladder playing an important role as a focus of infection. For it is entirely true that one rarely sees it acting thus in frank cases of cholecystitis. On the other hand, the whole practice based on this concept of focal infections is wrapped up in the recognition of latent and unobtrusive foci. The acute, the painful, the fulminating and the explosive infections work their harm in ways so conspicuous that they kill or are cured without lingering to set up a train of slow and secondary troubles.

Cholecystography will doubtless aid in the solution of this problem. My own situation is about this: Four chronic arthritics with positive or probably positive X-ray reports have been positively advised to have the gall-bladder removed. Also in one with supposed chronic appendicitis, the advice was for appendectomy and inspection of the gall-bladder. The appendix would, of course, be removed in all if occasion offered. Because of the object in view, radicalism is considered conservatism. But the inability to estimate results even with average confidence has doubtless led these people, already discouraged, to hesitate over further surgery. The one exception whose gall-bladder was removed a year ago, had stones, and the arthritic condition has given practically no trouble since. She was referred to us by an orthopedic surgeon.

We have concerned ourselves less with the clear-cut case than with those who get more tentative advice. It is not unusual to say to the patient: We believe you have gall-bladder inflammation; we propose to observe your progress and, as best we can, treat your symptoms. Under either of three conditions we shall advise operation: (a) If attacks of pain become too frequent or too severe; (b) if symptoms arise, such as chills and fever, showing absorption of poisons from the inflamed gall-bladder; or, (c) if symptoms of chronic indigestion tend to make life miserable.

This position is rather open to theoretic attack. It involves the free admission that surgery is the cure for cholecystitis, but it encourages delay in seeking relief. The answer to such an objection is that the patient is to be treated rather than his disease. Not only may the symptoms have been rather mild, but the medical attendant knows that such cases often improve under improved dietetic and other hygiene, that the risks of watchful waiting are not very grave, that every operation has its penalties as well as its rewards, and, often, that the patient is suffering from another condition to which the gall-bladder, in its present status, is of second rate importance.

But in pursuing a non-operative course, it must be remembered that the infected gall-bladder may do serious damage to the circulatory system, and that the eventualities we have so conservatively held back for may find the patient a much less favorable subject for operation. As stated in the beginning, the diagnosis of cholecystitis is wider than the gall-bladder.

TEAM WORK IN MEDICINE.*

By JOHN W. PRESTON, M. D., Roanoke, Va.
President, Medical Society of Virginia.

May it not in Medicine as in Religion seem profitable, or if not profitable, at least helpful, to draw apart from the hurry and hustle of the daily round, and in a sense meditate upon the broader aspects of the work in which we are engaged?

In this frame of mind, it is my wish to discuss with you in a somewhat informal way a few observations as they relate to the dependence of one physician upon another.

*Read before the Danville and Pittsylvania County Medical Society, in Danville, Va., March 13, 1928.

In the study of the human body, there is no chapter more interesting than that of the evolution of the embryo, the differentation of the organs from a shapeless mass, their development of function, the timing and correlation of one function with another, and finally the crowning of the individual with an intellect.

Likewise, the science and art of Medicine has developed from the gropings of the medieval ages to an exactness undreamed of in the not distant past. Its history holds a fascination and charm to which we give far too little heed. Through all its history, in spite of bickerings which have been but too frequent in the past, there runs a golden thread which unites the profession in the one endeavor to alleviate human suffering and each has freely given to the other his knowledge, even though gained at the expense of endless toil.

Upon this interchange of knowledge, and upon this purpose, is based all worth while organizations in medicine, and it may be said at the present day, to be the best organized of any of the professions. No mercenary motive, and no purpose of personal aggrandizement, or political preferment, has ever held any other so large a body of men together for any period of time corresponding to that during which organized medicine has existed.

It is, however, my purpose rather to consider the units of medical organization than the whole, and with this in view, the psychology of the individual doctor assumes the leading role.

One may safely state that in no other profession, or occupation as to that matter, does personality play so important a part as in that of the evolution of the practice of Medicine. It may in truth be said that each generation in medicine has been deeply influenced by some one, or more, winning or commanding personalities, who have shaped and directed its course. The same is true in a sense in each community.

Standing out in bold silhouette in the past century are such figures as Pasteur, and Louis in France; Lister, Sanderson, Hutchinson and Mackenzie, in England; Virchow, Ehrlich, and Koch in Germay; and Kocher in Switzerland; not to mention those of our own country, very many of whom sat at the feet of these masters, and drew inspiration from them, yet who in no less degree have stood out as beacon lights.

It is a curious fact that in practically all other lines of endeavor, men form enduring partnerships and work together harmoniously. With rare exception, not so in medicine; at least not so in the past. One speculates and inquires the reason and psychology of this.

May it not be that in the old days and even yet in a measure, save for an occasional consultation, the doctor's work has been alone with his patient, who expects, and prefers in a sense, to be dominated? The patient sends for his Doctor because he thinks his Doctor has superior knowledge, of medicine at least. May not this attitude of the patient and this constant association tend to create in the Doctor, in spite of the pitfalls into which he often stumbles, a feeling that after all his patient is partly right?—An attitude of mind in which the line of least resistance is toward an ego which is not always appreciated by his colleagues, tending toward a force which is centrifugal, rather than centripetal, in so far as his associates are concerned.

Let us consider some of the factors which are changing this attitude of one physician to another. Some two dozen years ago, the hospital which did not have some college affiliation was rare. Then came a few private hospitals here and there, established on a small scale by pioneers, strong men, but who for one reason or another chafed under college discipline and struck out independently. A notable example of these was our fellow Virginian, Joseph Price, peace to his ashes, who bearded the lion in his den and established a private hospital in Philadelphia, almost within a stone's throw of the colleges, with the policies and practices of the leaders of which he could not agree. Here he taught many a visitor the possibilities of clean surgery and of good surgery in a small institution.

A little later, Richard Cabot called attention to the fact that in our institutions there were just two classes of patients who got thorough examinations and study by doctors doing team work. The extremely poor, from whom no fee was expected, and therefore as charity patients were carefully studied by the groups working together in dispensaries; and the rich, who could afford to pay any desired number of specialists for a similar examination; and so the possibilities of the present day clinic begun to dawn; such a clinic as the Mayos had been conducting in their little western town for years, but the fame of which had not then reached us in the East.

Following the laws of evolution, by degrees the pioneers in private hospitals became less pugnacious and assimilated one or more associates, and begun to think in terms of clinics of their own. The World War over, medical men returned having learned through the force of circumstances the advantages of co-operation with each other, and of working together. A new era was at hand. Here and there a few public hospitals begun to grow more tolerant, giving ear to the recommendations of medical advisors, and permitted the organization into staffs of such physicians as could work together in a degree of harmony. In passing, I wish to say that in my opinion the organization of these staffs in the open hospital have, in the short time they have existed, done their full share in the development of team work in the profession. They constitute nuclei scattered over the country where there is a free interchange of ideas and comparison of work and where results speak for themselves.

It is freely granted that to maintain an harmonious working personnel in such organizations is worthy of the talents of high class executives, and that in every community there are unfortunate souls who would rather tear down than build up; and likewise rash individuals who wish to undertake work for which they are not fitted and who must be curbed,—fools who "rush in where angels fear to tread". This applies to public and private hospitals alike.

The final result is that today practically every town of consequence has a hospital manned by an organized staff. The millennium has not been reached, and there are yet Doctors who have not learned to give and take, but the leaven is working, and the proper spirit is abroad.

Did time permit, one would wish to discuss other outgrowths of the co-operative spirit, notably the relation of physicians to other professions, particularly that of Dentistry, Pharmacy, and Nursing; likewise, to some of the newer enterprises of co-operative medicine, such as that of Medical Arts Buildings, Group Collection Agencies, and Medical and Journal Clubs. All are in a sense experimental and still, like the hospital clinic, if one may borrow a term from insurance, carrying an element of hazard.

But, to hasten to the main purpose of this paper, the discussion of what I conceive to be the greatest need and opportunity of team work in Virginia is the development of some workable plan of postgraduate instruction for the average man.

I am not quite sure that the phrase "postgraduate instruction" carries with it exactly the meaning I wish to convey. It may be that it carries with it rather too much the idea of systematic study to appeal to the average man, who in a sense may be already overworked, or if not overworked, engrossed in other affairs. More properly speaking, what I really have in mind as a beginning is a series of lectures, demonstrations, and dry clinics which, by some happy chance, seem to best fit in, rather as a source of relaxation than of work. In actual practice this latter has seemed particularly true if given by some clinician or surgeon of experience as a teacher.

As a matter of interest, I have reviewed the records of the Virginia State Board of Medical Examiners, of which I happen to be custodian, and for comparison, I have selected a year out of each ten year period, beginning in 1905, and find the following:

In 1905, 153 applicants were examined, 48 failed, and 105 passed with an average grade of 79; a record of 32 per cent of failures.

In 1915, 113 applicants were examined, 9 failed, and 104 passed with an average grade of 81, a record of 12.6 per cent of failures.

In 1925, 89 applicants were examined with no failures, and an average grade of 86, a record of 100 per cent passing.

In 1927, 106 applicants were examined, 1 failed, and 105 passed with an average grade of 84; a record of 1 per cent failures.

Doubtless many of those whose grades were low, afterwards availed themselves of additional training but it is not probable that the majority had such an opportunity and it is but reasonable to suppose that the larger number settled down in various places in the State, became busy and so tied up in practice that progress has become well nigh impossible unless some radical means be devised to carry some type of instruction to them.

Coming to consider the high grades, above noted, of the recent graduates, it might be held that they would not be benefited by the class of work under consideration. I personally, have the greatest respect for the knowledge of books possessed by the present day graduate, but I am wondering if those who claim that clinical postgraduate training is not needed by him, have had an opportunity to learn how

little he really knows of the practical application of his knowledge to the treatment of the sick man, woman, or child, in his or her bed at home, and how little they have been trained in the handling of common diseases which constitute the bulk of work for the man in general practice. Most of all, how little opportunity he has had to learn that there is far more needed in winning the sick back to health than a knowledge of drugs and of surgery.

As is well known, with a few exceptions, the best endowed postgraduate schools do not wish short term students, and for the most part only the mercenary privately conducted schools offer such courses as the average man can take, and find most practical and profitable for the time at his disposal.

Of modern movements in medicine, nothing has exceeded the popularity of the three to five day clinics conducted by the College of Surgeons, the College of Physicians, and the Postgraduate Assembly of North America. As anyone who attends these clinics and lectures will attest, they are simply crowded from early morning to late at night. Likewise, dry clinics held by certain medical societies on the first one or two days of their meetings are among their greatest attractions.

Local medical organizations are dong a great work in bringing practitioners together and in stimulating better work. Journals are constantly growing better, but there is a contagiousness in seeing and hearing demonstrations and lectures by the leaders in medical thought that enthuses. It rekindles the spark of smouldering ambition, quickens the senses of perception, and fixes facts in the memory as no amount of reading will do.

As has been stated elsewhere, the two medical institutions of our State have put on, or are planning to put on, short postgraduate courses. These should be encouraged and fostered. Yet this does not, at least in the beginning, reach the men above referred to, most of whom are tied closely with obstetric and other exacting work, and who cannot, or think they cannot leave home, for even a few days at a time.

It may be that Virginia is not yet quite ready for college extension work, but can we not make a beginning and launch the State and Local Societies in a co-operative movement, feeling the way toward more systematic postgraduate work as the possibilities are appreciated, and opportunities developed?

Methods of efficiency have speeded up all lines of business to a degree of proficiency never known before. Even the occupations have felt the touch. In certain quarters medicine also has responded, for its growing breadth and scope is such that unless like other lines of endeavor we avail ourselves of opportunities of learning from each other, and through modern methods of instruction, we will fall behind the procession, and lose the advantages and prestige to which our years of training entitle us.

The following States have developed plans of college extension work, or postgraduate work, more or less satisfactory to themselves: North Carolina, Missouri, West Virginia, Oklahoma, Minnesota, Colorado, Ohio, Pennsylvania, and New York.

As you doubtless know, a committee of our State Society is endeavoring to work out some plan best suited for Virginia. Pending a report of this committee, I would suggest the feasibility of our local societies arranging quarterly, or biennially, for say a day or even an afternoon of intensive clinics and demonstrations on the day preceding their regular meetings. This is suggested in the way of experiment and following the line of least resistance, but with the definite purpose of developing at an early date regular systematic courses of postgraduate instruction or college extension work. Chief of all it will act as a stimulant and feeder to the intramural clinics of our two State institutions above mentioned, both of which are ready to join us in the way of team work.

In conclusion, I wish again to emphasize the importance of what has, in a short space of time, been accomplished by co-operation in the profession of medicine, and the still greater opportunities of accomplishment in the future.

Shenandoah Life Building.

DERMATITIS MEDICAMENTOSA—DRUG ERUPTIONS.*

By CHARLES B. CAMPBELL, M. D., Washington, D. C.

This dermatologic term is applied to various skin manifestations due directly to the internal administration of drugs. This differs from a skin eruption caused by external agencies. This latter condition is known as dermatitis venenata. These cutaneous lesions are

*Read before the Medical Society of the District of Columbia, October 12, 1927.

influenced by individual susceptibility, elimination through the skin, large dosage and continued administration. There is no drug taken internally that may not at times produce a cutaneous eruption. They embrace galenicals, chemicals, vaccines and serums.

Drug eruptions are due to the formation of a toxin, protein or anaphylactic reaction causing an irritation of the skin. Stelwagon says the drug acts as an irritant as it passes through the cutaneous tissues.

Symptoms

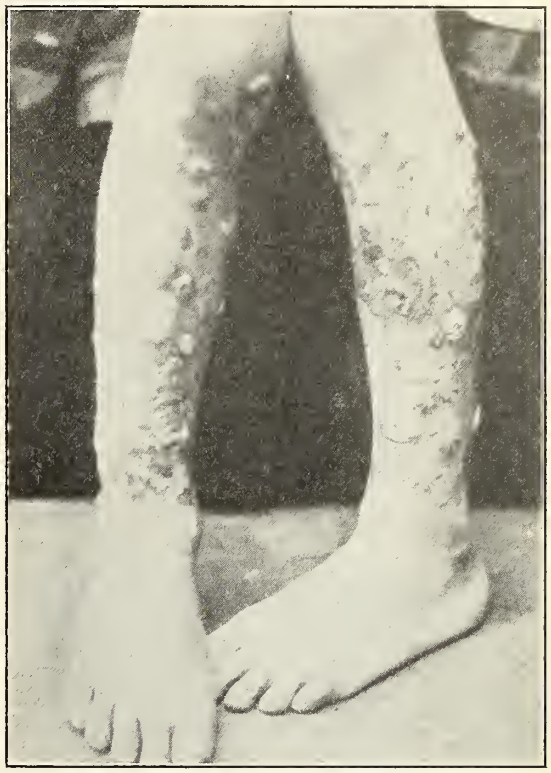
The objective manifestations may run the entire gamut of cutaneous lesions. We find the macular, papular, vesicular, bullous, *particularly the urticarial*, pustular, ulcerative, nodular, and, if long continued, the gangrenous.

In this brief paper, and for all practical purposes, we shall discuss those drugs most liable to produce skin eruptions.

Arsenic.—Under this heading could be included Fowler's solution, Donovan's solution, arsphenamin. They all contain arsenic. This drug produces a variety of lesions—erythematous, papular, vesicular, urticarial, and sometimes a scarlatiniform eruption. Long continued use produces the well-known exfoliation, sometimes with pigmentation; also hyperkeratosis of the palms and soles. At times arsphenamin will produce a jaundice several days after injection.

Bromide eruption of condylomatous manifestations in a young child.

Alcohol.—This includes the whole category from alcohol to vini xerici. Alcohol produces a papular eruption on the skin that is usually erythematous, widely distributed, and of various sizes and shapes. It is a real erythema multiforme, hard to distinguish from an urticaria.



Bromide eruption with papulo-pustular lessions.

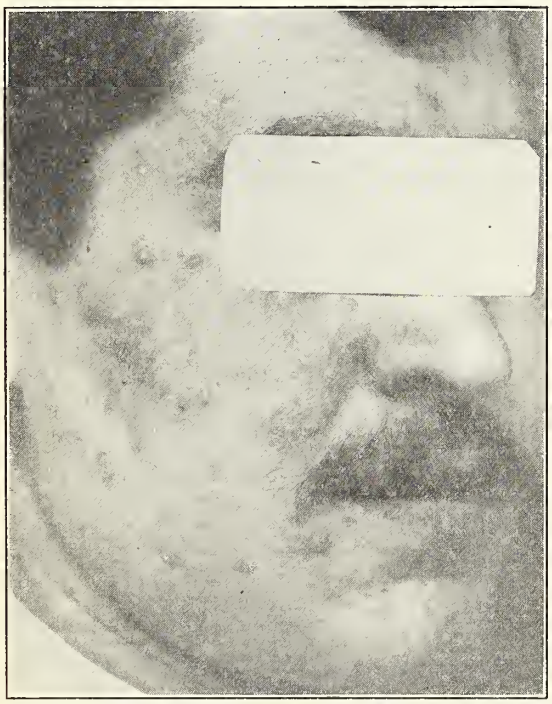
Atropin and Belladonna.—This substance produces a skin eruption more frequently than we realize. The oculist uses atropin for instillation in the eyes; the physician prescribes belladonna internally, and the laity sticks to the belladonna plaster or the belladonna plaster sticks to the laity. Belladonna rash is a confluent papular lesion, often slightly red, and accompanied with itching. At times it may simulate the eruption of measles or scarlatina.

Bromides and Iodides.—These lesions are very much alike, seldom produced unless large doses are given or long continued. They have a cumulative effect. The eruption is composed of large bullae or may be of a papulo-pustular type. They are more or less scattered over the body, with a predilection for the face and lower extremities. This condition persists long after discontinuing the bromide or iodide, particularly the bromide. Infants sometimes get an iododerma from the mother's milk. Cases fatal to infants have been reported.

Quinin.—This eruption is not frequent. Idiosyncrasy and not dosage is responsible. The very smallest dose sometimes causes skin manifestations. These are urticarial, erythematous, scarlatiniform, at times resembling measles or scarlet fever rash. There may be a slight fever, and it is often accompanied by itching. At times there may be desquamation with gangrenous lesions.

Salicylates. — This includes sodium and strontium salicylate, also acetly-salicylic acid (aspirin). This latter salicylate is used so frequently that many cases are seen. The eruption is urticarial in appearance, sometimes with some slight redness, with or without itching. Luminal, used extensively as a sedative in epilepsy, produces a papular eruption, often on the mucous membrane of mouth; it also affects the tongue, giving the appearance of epithelioma.

Synthetic Compounds. — These include phenacetin, veronal, trional, and a host of coal



Iodide eruption of Acneform lesions.

tar derivatives. They may produce any form of skin eruption—papular, vesicular, urticarial and bullous. They also often produce a slight rise in temperature.

Phenolphthalein.—As pointed out by Eller and Wise, this drug may cause a peculiar eruption of the skin. This is important considering the number of patent cathartics on the market during recent years. It is found in

Iodide eruption with large bullae.

phenolax, ex-lax, alophen, agar oil emulsions, and sometimes in fluid extract cascara, as an adulterant. It produces a polychromic skin rash resembling erythema multiforme, and clinically, is a persistent eruption. It is first red or violaceous, turning to a dark brown or chocolate color. This is very persistent and may remain for months or years after discontinuance of the phenolphthalein.

Antitoxins and Vaccines. — The so-called "serum rash", or "serum sickness" is well known to every physician. There may be simple redness, urticarial lesions, or a morbilli or scarlatiniform rash. Sometimes it comes on suddenly or may be delayed several days. It is usually accompanied by a slight fever and malaise, with pain and swelling in the joints.

There are many more drugs that could be mentioned as frequently producing medicinal eruptions.

Diagnosis

This is sometimes difficult. The onset is commonly sudden, particularly the urticarial or erythematous types, with absence of or slight fever. In these cases, inquiry should be made to ascertain what medicines are being taken, particularly so with eruptions of the nature of an exanthem. Many so-called second attacks of exanthemata are due to drug rashes from the medicines given for this condition.

In most drug rashes the constitutional symp-

toms are absent or very mild. This will aid in diagnosis.

TREATMENT

Discontinue the drug. This will clear up the milder cases in a short time. Internally give saline laxatives, alkaline diuretics, and advise the drinking freely of water for elimination from the system. In grave cases, stimulating treatment is necessary. In cases of bromide or iodide eruption, the intravenous injection of solution of sodium chloride (physiological salt solution) or solution sodium thiosulphate (dose—.5 to 1.). These will combine with the promide or iodide and make it more soluble; hence, hasten the elimination. The sodium salts are not so apt to produce cutaneous eruptions as are the potassium.

Externally, treat the condition in the same manner as the eruption it simulates. Calamin lotion may be used and, if much itching, add ½ to 1 per cent phenol; carron oil combined with zinc oxid is likewise useful. Where there is an urticarial condition with considerable pruritus, a cooling lotion composed of menthol, phenol, glycerin, alcohol and water is helpful.

The Farragut.

JOHN LEIGH, M. D.

By J. L. MILLER, M. D., Thomas, W. Va.

With the assurance of youth, yet with becoming modesty, a young Virginian, John Leigh, M. D., in 1785 entered the list of contestants for the Harveian Society prize, and won it by the excellence and originality of his paper. A year later it was published as a pamphlet of a hundred and forty-four pages under the title of

"An Experimental Inquiry into the Properties of Opium, and Its Effects on the Living Subjects."

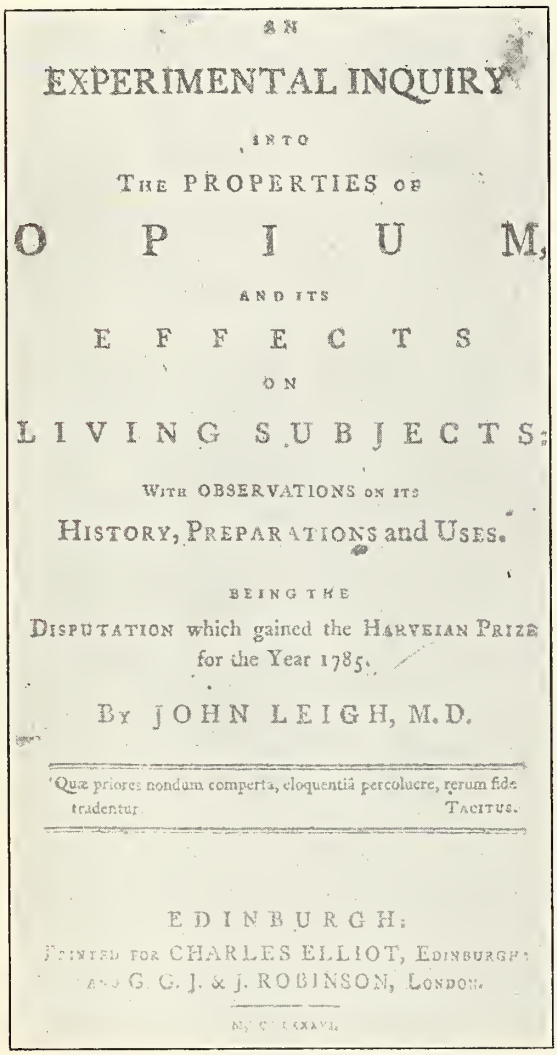
Although he was appearing before a British Society so shortly after the Revolution, he had the affrontery to dedicate his work to "George Washington, Esq., a man equally revered by the Friends and Foes of his Country; and whose character will, with unrivalled luster, be transmitted to the latest ages of posterity, for consummate conduct and courage, public and private virtue." Only a few copies of this little work have survived. There is one in the library of The Surgeon General, and the Richmond Academy of Medicine will have one, thanks to the generosity of Dr. Stuart McGuire who gave me a copy that belonged to his father.

While Leigh made no substantial discovery, yet he is worthy of remembrance as *a pioneer* in the attempt, by original research work, to sift the gold from the dross of eighteenth century medicine, or, in the words of Dr. Howard A. Kelly, "Leigh's work was the dawning of the critical, experimental spirit destined to yield such a harvest in the next century."

But little is known of the author, except that he is supposed to be the John Leigh, son of Francis and Elizabeth Roscoe Leigh, of King William County, who entered William and Mary College in 1769, and later, with his brother William, went to Europe to complete their education, both graduating in medicine from some French or Dutch University. It is thought he was doing post-graduate work in Edinburgh when his paper was written. In his introduction, he says: "The difficulties which any young author must encounter when he solicits, for the first time, the attention of the public, are sufficient to damp the ardour even of the most active genius; and must of necessity appear doubly formidable to the man who is diffident of himself. Criticism lies in wait for the discovery of error; satire prepares its shafts; the merits of the work, if it can boast of any merit, are frequently overlooked and its defects sedulously held forth to the eyes of the world." . . . "The author of the present Treatise is not so vain as to imagine that he possesses anything in himself which is capable of shielding him from these attacks. And had he nothing to support him but his own authority, he never would have ventured to appear before the awful tribunal of the public. But he has the happiness to find that he possesses something more solid to depend upon. His treatise has obtained the Patronage of the *Harveian Society*, the members of which have repeatedly distinguished themselves by their eminent abilities. The approbation of this respectable society has encouraged him to give to the world what otherwise his diffidence would have led him to with-hold."

Leigh's work was a careful and critical experimental study of the great number of opium preparations used in his day, and the various effects of the drug in its purest form upon living subjects, both animal and human. After a short history of the discovery of opium and its use by the ancients, he proceeds with thirty-

five "Experiments" or careful analyses, weighing and tabulating his results as to the amount of pure opium, gum, resin, and "feculent" or inert matter in each, solubility, fermentative changes, etc. With the results of his "experiments" at hand, he takes up fourteen of the favorite "shotgun" preparations of opium used by the doctors and highly recommended by the London Dispensatory and Edinburgh Pharmacopoeia—the authorities of their day, —and hardly a one of them he does not take a


AN

EXPERIMENTAL INQUIRY

INTO

THE PROPERTIES OF

OPIUM,

AND ITS

EFFECTS

ON

LIVING SUBJECTS:

WITH OBSERVATIONS ON ITS

HISTORY, PREPARATIONS and USES.

BEING THE

DISPUTATION which gained the HARVEIAN PRIZE for the Year 1785.

BY JOHN LEIGH, M.D.

'Quæ priores nondum comperta, eloquentiâ percolucre, rerum fide tradentur. TACITUS.

EDINBURGH:

PRINTED FOR CHARLES ELLIOT, EDINBURGH; AND G. G. J. & J. ROBINSON, LONDON.

MDCCLXXXVI.

Photostat copy of title page of Dr. Leigh's pamphlet on "An Experimental Inquiry into the Properties of Opium, and Its Effects on Living Subjects."

shot at, firmly, but politely, criticising the doctors and druggists for their adherence to these ancient and for the most part foolish and worthless mixtures. Only two or three of them pass muster, and in them he recommends changes that would render them less bulky and nauseous, and more palatable and efficient.

He opens on them with: "We find that, led away by blind prejudices, or an uncommon attachment to former customs, some of the many preparations of opium introduced by the most ancient physicians are still retained which will be found by minute investigations to be useless." Of three of their pet formulas, official in the Dispensatories, he says: "It is not a little wonderful that the physicians of the present day should suffer themselves to be led so far by their attachments to the ancient customs as still to retain among them the above formulae."

Regarding the famous old Extractum Thebaicum, he remarks: "This preparation is highly recommended by the London Dispensatory as the one in which we have opium in its purest state. I trust, however, I have proved by Exper. XXII, and Exper. XXIII, that it does not possess this advantage . . . these reasons lead me to believe that it would be advisable to throw aside this formula altogether." Some of his criticisms are delightful, as, for example, these regarding four of their "shotguns" containing small and doubtful amounts of opium: "If any good effects were ever observed to follow the use of this preparation I am induced to think that opium is entitled to no part of the merit."

"This preparation is stuffed with a number of ingredients, among which opium is introduced, but in so small a quantity that we are denied the liberty of saying any salutary effects arise from its operation."

"The Jamaica pepper, recommended as one of the many ingredients in this formula, may perhaps be useful in rendering the opium more palatable, but no medicinal virtues can be expected from any of them."

"But whether any benefits can ever be expected from this formula seems doubtful."

He hands the London Dispensatory a hot shot on a formula they had attempted to improve, when he says: "Many of the ingredients formerly contained in this formula have lately been thrown aside as totally superfluous, and I am induced to think, *if the reform had been more extensive*, the preparation would have been rendered more elegant and clearly more valuable." Nor does he spare the Edinburgh Pharmacopoeia when he reminds its editors that after one of their attempts at improving

an electuary, one still had to take ten scruples of it to get one grain of opium. He even took the liberty of advising Dr. Duncan of the University of Edinburgh that his favorite opium pills made up with stale bread frequently failed to dissolve in the stomach and that by substituting extract of liquorice he would obviate this and also make them more agreeable to the stomach.

After disposing of the various preparations of opium, he takes up in detail thirty-four experiments he made with the best and simplest preparations of the drug on the living subject. In his vivisection work he used rabbits, dogs and cats, and on the human being several different friends and himself. These experiments included injections into the eye, the urethra, vagina, intestine, the exposed heart, bared muscle, nerves, blood-vessels, unbroken skin, etc. He carefully noted all the effects or lack of them—time of absorption, maximum effect, disappearance, any changes in pulse, local heat, nausea, dreams, hallucinations, pain, etc. The last few pages of his work were devoted to the uses of reliable preparations, particularly the good effects in typhoid fever, smallpox, and dysentery after thorough cleansing of the intestine.

This little pamphlet, written nearly a hundred and fifty years ago, clearly shows that John Leigh possessed an analytical mind in advance of his day that would have ranked him high in research work at the present time had he had the advantage of modern training and equipment. So far as I can ascertain, his name has come down through this one effort. Perhaps it showed him the uselessness of trying to change the medical thought and practice of his day. But his brave attempt to bring the physicians of that time to study the drugs they loaded into their patients and to depart from slavishly following the empiric polypharmacy of the ancients, surely deserves remembrance.

SURGICAL PRINCIPLES IN THE TREATMENT OF UTERINE PROLAPSE.*

By LINWOOD D. KEYSER, M. D., Roanoke, Va.

To discuss the treatment of uterine prolapse may seem superfluous in the light of the voluminous literature which has arisen on the subject. However, no field of surgery is so replete with dissatisfaction and conflicting opinions; therefore, the justification for a review of some of the principles involved in operative therapy. Uterine malpositions, especially of the retroversion-retroflexion varieties, while perhaps not necessarily associated with actual prolapse, may for our present purpose be included in the type of cases under consideration.

The normal anterior position of the uterus is maintained by several factors. Chief of these is the proper tone of the anatomical supports, especially the uterine cardinal ligaments and the posterior or sacral segment of the pelvic floor. The elasticity of the uterine musculature and the action of abdominal pressure, which latter serves to keep the anterior uterine wall in contact with the bladder, are also important factors. When any of these supportive factors are not in force, a tendency to retroversion, descensus, or prolapse may ensue. Among the specific causative factors, childbearing, of course, with the strain and tear upon the pelvic organs, especially in disrupting the continuity of the perineal raphe and the levatores, occupies first place.

So-called congenital retroversion is associated with maldevelopment, with poor tissue tone. In infancy and childhood the uterus is normally retrocessed and often retroverted. Congenital retroversion is therefore a phase of infantilism, and this type is often associated with other infantile features, such as a short anterior vaginal wall and short uterosacral ligaments. As a consequence, we would expect little from surgical or other form of correction of the uterine malplacement.

Acquired retroversion other than that associated with child-birth may be the result of constitutional disease, the strain of arduous occupation with long hours of standing, and the like. Loss of tone in the fascial and muscular supports allows a sagging backward which is further accentuated by pressure of the abdominal contents on the anterior uterine wall. Again, with the approach of the menopause, there is atrophy of the uterine musculature and this frequently predisposes to acquired retroversion. These acquired displacements may in time lead to descensus, but in nulliparous women, are not types often associated with extreme grades of prolapse. However, rarely this may occur.

Prolapsus in parous women is more often of serious import. With the descent of the

*Read at the meeting of the Southwestern Virginia Medical Society in Bristol, Va., September 22-23, 1927.

uterus, the vaginal wall, the bladder, uretha and rectum may in various degrees be pushed downward with the formation of rectocle and cystocele.

What shall we do with these conditions? Of most concern is the clinical significance and management of simple retroversion, and regarding this there is no uniformity of opinion. For instance, Stacy, in one thousand unmarried women, found simple retroversion in 20.2% of the cases. These were considered to belong to the congenital type. This observer holds strongly with many others that simple developmental retroversion is a part of a general picture of deficient development and that the uterine malplacement is not *per se* a cause of symptoms. Graves and other gynecologists hold, on the other hand, that any uterine displacement is a potential source of trouble, and that the majority of women suffer in some way when the condition is present. Sacral backache, and a sense of pelvic pressure are most often complained of, while dysmenorrhea, sterility, and repeated abortions may cause the patient to come for examination. In 500 cases of retroversion Graves found sacral backache as a symptom in 76%. Obviously, there is a marked divergence of opinion, the condition of retroversion being held to be physiologic on the one hand and not demanding treatment, while, on the other, it is held to be the cause of most of the pelvic ailments to which women are subject. Probably the truth of the matter lies somewhere in the midground. The practical point of when to advise operation for retro-version is difficult of answer, and will involve individual judgment in the individual case.

A freely movable uterus easily lifted forward and tending to remain anteposed, either with or without anesthesia, is generally considered to be unsuited to surgical treatment. The use of a properly fitted pessary with or without relief may give some idea as to how much symptomatology such a womb is producing. The pessary is unsuited to retroflexed cases, to patients with tubal or ovarian disease, to cases of ovarian prolapse, and where extensive perineal lacerations are present. The pessary may be used temporarily with tamponade in the effort to build up uterine tone in treating certain first and second degree retro-version cases. It may be used to replace the uterus temporarily in order to see if proper position relieves the symptoms complained of. Likewise, in early pregnancy where uterine incarceration is feared and in the post-puerperal state of uterine subinvolution, the pessary may be satisfactorily employed. In my own opinion, the use of the pessary is a temporizing procedure almost always. Its permanent usage is unsurgical and unsanitary. We have introduced a prosthetic foreign body into a mucosa covered canal, and the same irritation that follows the introduction of foreign bodies into other mucous lined channels comes into play. Sooner or later an irritating cervical discharge, ulceration of the vaginal vault, pelvic congestion and possibly pelvic inflammation with the formation of intra-abdominal adhesions will take place. The stem pessary of the Wylie type is particularly fraught with these dangers, my own experience with it in dispensary and private practice having taught me to look upon the object with considerable respect.

In short, then, it is my own conviction that suspension operations should be done when relief of symptoms occurs after temporary use of the pessary, and when recurrence of the retro-version takes place when the use of the pessary is abandoned; also, in those cases with difficult reposition either due to retroflexion or to peri-uterine adhesions; and in those cases associated with definite pelvic inflammatory disease. Of course, the patient should be suffering in degree sufficient to warrant surgery, and a careful general examination—especially from the standpoint of orthopedics and urology—should be carried out to eliminate other factors in the production of symptomatology.

In the treatment of true uterine descensus, prolapse, and procidentia, the symptomatology and surgical indications are more clean cut. Such cases have been classified for therapeutic purposes into several groups by W. J. Mayo. The first group includes those patients in the child-bearing period in which there is usually supravaginal elongation of the cervix along with the prolapse. The cervix may protrude at the vulva, carrying the bladder with it and producing cystocele. In this class of cases one may combine an external or internal Alexander operation, with high amputation of the cervix and transplantation of the bladder wall upward several inches, or a Kelly cystocele operation may be done, to be followed by an

internal round ligament operation of the Gilliam, Olshausen, Baldy-Webster or other technique, according to the wishes and ideas of the individual operator.

A second group of cases ordinarily seen at from forty-five to fifty years of age presents a uterus of fair size. Here the child-bearing function is out of consideration and an operation of the Watkins-Wertheim type is satisfactory. The principle of this operation involves the separation of the bladder from the anterior vaginal and uterine wall, with forward rotation of the uterus beneath the bladder. The fundus of the anteriorly rotated uterus is sutured to the anterior vaginal wall beneath the symphysis. The bladder thus is placed in the abdominal cavity and lies on the posterior surface of the uterus. Care must be taken that the uterus is of sufficient size to act as a support and not so small as to allow further prolapse. Also, it must not be so closely sutured under the symphysis as to impinge upon the urethra. If the operation is attempted in the child-bearing period before the menopause, the tubes must be carefully divided and distally ligated to avoid the disastrous consequences of future pregnancy. An elongated cervix should be amputated as a preliminary measure, and, as in all plastic operations for prolapse, a careful posterior repair should be done.

A third group of cases comprises those elderly patients with prolapse of a senile atrophic uterus, which is too small to be treated by the interposition technique. Often the entire uterus and vagina may lie outside the body cavity. The Mayo technique of vaginal hysterectomy with subsequent suture of the approximated broad ligaments high under the symphysis and below the bladder, is satisfactory in these cases. The incidence of failure is rare, and this operation is perhaps the procedure of choice. In selecting cases suitable for the Mayo operation, one must see that the vagina is large enough to provide ample working room, and yet not be so large as to necessitate apposition of the broad ligaments under too much tension. The operation must not be attempted in the presence of senile vaginitis.

Another technique is that devised by Kocher, who lifted the corpus uteri through a median abdominal incision and sutured the peritoneum and abdominal wall snugly above the cervix. The fundus was covered with the skin. By this procedure the marsupialized uterus lifts up the slack in the anterior and posterior vaginal walls, thereby reducing the cystocele and rectocele. A short vagina, it is to be noted, is a contraindication to the operation.

Supravaginal hysterectomy with suspension of the cervical stump by the round ligaments is frequently practiced with good results. The procedure has the inherent danger of subsequent vaginal prolapse. Such prolapse will then require suture of the cervical stump to the abdominal wall or total denudation of the vaginal mucosa so as to allow the rectum and bladder to fall together, obliterating the vaginal cavity by suture.

In general, it has been our experience that operations done from below are attended by less shock and general discomfort to the patient than those done by abdominal section. Especially in the very obese types does one wish to avoid making an abdominal incision, and here, likewise, appears the value of the Watkins-Wertheim or Mayo suspension technique. In general, these are the principles that have guided us in dealing with uterine misplacement and prolapse and the results have almost consistently justified the means.

In one instance a woman of forty years had had a suspension operation done by the Olshausen technique about ten years previously. In spite of some improvement, cystocele persisted—with considerable difficulty in emptying the bladder. While the uterus was in good relative position, evidently not enough of the slack in the anterior vaginal wall had been taken up to reduce the cystocele. By performing a Kelly cystocele operation, or anterior colporrhaphy, and then opening the abdomen and fixing the uterus at a higher point on the abdominal wall, the cystocele was completely reduced, since which time the patient has had no vesical difficulty.

We have applied the Watkins-Wertheim principle with consistent satisfaction. One obese patient upon whom I had operated six months previously for a cholecysto-duodenal fistula, presented a total prolapse of the uterus and bladder. The patient was about sixty-five and not a suitable subject for further abdominal surgery. Reduction of the uterus and prolapse over a period of several weeks with tampons was followed by an interposition operation under gas and local anesthesia. An ex-

cellent restoration of bladder function has been brought about.

As regards the operation of choice for intra-abdominal suspension of the uterus, we have employed the Baldy-Webster technique and the round ligament shearing operation devised by Long, as being less likely to be attended by dystocia during subsequent pregnancy and in not producing pockets into which the intestines may prolapse and give rise to obstruction, a consequence which has been occasionally observed following the Gilliam technique.

A word in closing with regard to the perineal repair. Care is to be exercised in not closing the vaginal orifice so tight as to produce dyspareunia. Suture and dissection should be done in such a way as to avoid Bartholin's ducts or a boggy painful perineum may result. The denudation is usually carried out along the lines of Emmett or Hegar, although each month we see some variation in this feature of the technique described. I believe it was Tait, in England, and Kelly, in this country, who emphasized the approximation of the levator muscles as the key to success and the essential feature of every perineorrhaphy. This approximation should be made with sutures not under too much tension, or painful cutting through of the sutures may cause great discomfort for a number of weeks during convalescence. Another feature is care not to bury beneath the suture lines the small tags of vaginal mucosa, lest the painful little vaginal cysts described by Cullen should arise.

The same daily care of the usually undressed perineal wound should be carried out as meticulously as we care for other surgical wounds. The perineum is by nature resistant to infection, probably because of its close proximity to the rectoanal canal. Daily flushing with some non-irritating antiseptic solution, such as potassium permanganate, and the careful application of sterile dressings has resulted in a low incidence of infection. Vaginal packs and sponges should be removed as early as consistent with safety, as their presence promotes discharge and leads the way to infection. If, in spite of these precautions, infection and abscess formation take place, puncture of the area with a small paracentesis knife will provide drainage, and the application of hot dressings at frequent intervals will usually save the day.

BIBLIOGRAPHY.

Mayo, W. J.: Surgical Treatment of Prolapse of the Uterus and Walls of the Vagina. *Jour. A. M. A.*, 1912, LIX, 1421-1424.

Richardson, E. H.: Interpretation of Lumbo-Sacral Backache in Women. *Southern Med. Jour.*, 1918, XI, No. 2.

Stacy, Leda J.: Anteposition and Retro-Position of the Uterus.—Incidence and Symptoms. Collected Papers of the Mayo Clinic. 1922, XIV, p. 393.

Masson, J. M.: The Technique of the Mayo Operation for Cystocele. *Surg., Gyn. and Obstet.*, 1926, XLIII, No. 4, 505-507.

Watkins, T. J.: The Treatment of Cystocele and Uterine Prolapse After the Menopause. *Amer. Jour. Obstet. and Gyn.*, November, 1899.

Kelly, H. A., and Nobel, C. P.: Gynecology and Abdominal Surgery, Saunders, Vols. I-II, 1910, Philadelphia.

Brady, Leo: Results with the Watkins Interposition Operation in the Treatment of Prolapsus Uteri. *Surg., Gyn. and Obstet.*, 1926, XLIII, No. 4, 476-479.

Graves, W. P.: Gynecology, 1923, Saunders, Phila., p. 936.

Shenandoah Life Building.

SOME ASPECTS OF INFECTION OF THE URINARY TRACT.*

By G. S. SILLIMAN, M. D., Abingdon, Va.

It is not the purpose of this paper to present anything new or unusual. It has seemed to the writer ever since he attended his first medical meeting that more is to be obtained from taking up some clinical condition and discussing it than from the recitation of unusual cases. This, of course, has no personal meaning, as applied to the present meeting, for I am unaware how the subjects listed on the program are to be treated at the present time.

Infection of the urinary tract is a wide subject. And right now, it is not intended to cover the whole field. Purposely, tuberculosis of the urinary tract is omitted, for it is in itself sufficient for many papers. This paper will attempt to discuss only the symptomatology of the more usual types of pyogenic infection distal to the prostate.

Too much confidence can be placed in laboratory findings. A wise instructor of my student days repeatedly drilled into us that a negative finding meant nothing. At least ten negatives and at least two positives were necessary from the laboratory before he was convinced. Too often, for example, we send a specimen of urine to the laboratory, or examine it ourselves, once only, and base our diagnosis and treatment on this one exami-

*Read before the Southwestern Virginia Medical Society, at Bristol, Va., September 22-23, 1927.

nation, only to be disappointed in the results of treatment, or to be chagrined by a reversal later. One sees in practice not a few snap diagnoses made, and one marvels that so little attention is paid to the obvious possibilities of error.

For the purposes of this paper, let us roughly divide the urinary tract into the upper portion—to include the kidneys and ureters; the mid-portion—to include the bladder; and the lower portion—to include the prostate and urethra.

Let us first consider the symptoms common to all forms of infection of the urinary tract. It always seemed to me that text-book pictures convey the idea that disease is precise and constant in the presentation of symptoms. In practice it is obvious that the actions and reactions of the human body obey no law. It is difficult to draw the line between even the normal and abnormal.

Generally speaking, the most common symptom of infection is a rise in temperature, varying in magnitude with the nature of the bacteria, the extent and location of the lesion. This fever may be so mild as to be overlooked. It may also be the sole symptom of the infection.

The next most common symptom is pus in the urine. Here is a possibility of error. There is such a condition as circumscribed abscess in the kidney cortex, where no pus is present until and unless the abscess bursts into the pelvis, which eventuality is sincerely to be wished for. Then do not forget that uncatheterized urine is not to be relied on, even in the male. Recently I saw the case of a man with a fairly severe posterior urethritis, who had lost considerable time and money, simply because his physician had found pus in his urine and was treating him for cystitis.

Often this pyuria is the first symptom that draws our attention to the urinary tract as a possibility. It used to be taught that thick pus that settled to the bottom meant pus from the upper urinary tract, while thin, well scattered pus meant cystitis. It was also a common belief that pus casts indicated an infection of the kidney substance. Careful research has exploded these ideas. If casts are present in kidney infection, they are of the hyaline and granular type, and very scarce. Generally speaking, pus casts are the result of profoundly toxic conditions of an universal systemic infection.

Pain, if present, helps us to some extent to locate the site of infection. In acute infections of the upper urinary tract, generally the pain is in front, in the lumbar region. If on the right side, this may confuse with appendicitis or cholecystitis. An effort should be made, if no pus is present in the urine, to palpate the kidney itself. The kidney is exquisitely tender in peri-renal abscess, and the same region, likewise, in many cases of acute cholecystitis. Jarring the right heel may then help. As a rule, this aggravates the pain of peri-renal abscess, but not of cholecystitis. It produces the same effect on an acute appendix, however. Fortunately, peri-renal abscess is a rather uncommon condition, and, like acute cholecystitis, demands prompt surgery. An exploratory operation is sometimes necessary to establish the diagnosis.

In chronic infection of the upper urinary tract, this sort of pain is absent. Poly- and dysuria are more common. These two symptoms, however, are so prominent in tubercular infection, that their presence should excite suspicion of the latter. The toxins of infection may give rise to reflex or remote symptoms, that mask their cause. This toxin may be caused by destruction of, or interference with, the renal function; or the bacterial product may give rise to some of these manifestations. Loss of weight, nausea, dryness of the mouth or throat, constipation, headache, sallow complexion, mental irritability or torpor, delirium or even mania, hiccup, and arterial hypertension may be the result.

Cystitis is hardly ever a primary condition, though it may follow retention, or injury, such as outside violence, instrumentation, tumors, or the passage or presence of calculus. Any obstruction, or condition that prevents the nearly complete emptying of the bladder may lead to the bacterial decompositon of the residual urine, and set up a cystitis. In this condition, a great deal depends on the reaction of the urine. Colon, tubercle and typhoid bacilli, and the gonococcus grow best in acid urine. Staphylococci and streptococci, and the bacillus proteus do better in neutral or alkaline urine. Mixed infection is much more common in the bladder than the upper urinary tract. Cystitis is generally an infection spreading downward from the upper tract, or

upward from the lower. It may be ignored until the primary condition is under control. The primary condition must be cured before we can hope to do much with the secondary.

The localizing symptoms of cystitis in the acute stage are frequency and pain, particularly on urination. In the chronic stage, there may be no subjective symptoms at all. Only the presence of pus in the urine may indicate the lesion.

The presence of pus in the urine calls for cystoscopy. The cystoscope today is as essential in its rather narrow field, as the stethoscope in its field. The use of this instrument is, of course, much more uncomfortable than the stethoscope. Still the discomfort is transitory, rarely lasting more than twelve hours, and the information gained is invaluable. The source of pus or blood is accurately located, the presence or absence of a calculus established, the kind, extent and destruction caused by infection ascertained, anomalies, deformities, neoplasms and misplacements correctly learned. Results will differ in various hands, much as the results of other examinations. The more use one has of it, the more accurate will be interpretation of findings.

Correspondence

Some Interesting Bits of Medical History.

Newport News, Va.,
March 29, 1928.

To the Editor:

In searching through some old Legislative Records, we found in the Acts of the Assembly of Virginia some priorities of which Virginians should be proud and we send them to the Monthly as a matter of interest:

1632. An Act for the Registering of Vital Statistics "In every parish church within this colony shall be kept, by the mynister a booke, wherein shall be written, the day and yeare of every christening, weddinge and burriall". Re-enacted in 1713 to include births.

1722. An Act for the establishing of a Marine Quarantine.

1748. An Act Prohibiting Negroes from the Practice of Medicine under the penalty of death without the benefit of the Clergy.

The Medical Society of Virginia was organized in 1821.

1824 (January 2). An Act to Incorporate the Medical Society of Virginia.

1826 (April 20). An Act to Amend the Charter of the Medical Society of Virginia.

1851. An Act to Incorporate the Medical Society of Virginia (a Re-enacting of the existing law).

1858. The Medical Society of Virginia met in Richmond, the last meeting of which there seems to be any record until 1870.

1870. The Medical Society of Virginia was re-organized by 92 doctors in Richmond, Va., November 2, 1870. Regular annual meetings have been held at various places throughout the State each year since, except 1918. That year, the Executive Council held a called meeting and indefinitely postponed the 1918 meeting on account of the influenza epidemic during the World War.

References.

Hening, Vol. I.
A Catalogue of the Publick Acts of Assembly, printed by William Hunter, 1752.
Medical Recorder, 1826, X, 121-152.
Stethoscope, 1851, 282, 285.
Stethoscope, 1851, I, 113-121.
Manuscripts and Records in the Library of the Medical College of Virginia, etc.

Clarence Porter Jones.

Sir William Osler.

Staunton, Va.,
March 26, 1928.

To the Editor:

Dr. W. R. Betts of St. Bartholomews Hospital, London, has called my attention to an error in my address upon Sir William Osler which appeared in the September number of the Virginia Medical Monthly.

The statement that Osler was President of the British Association for the Advancement of Science is incorrect. Instead, he was President of the Classical Association.

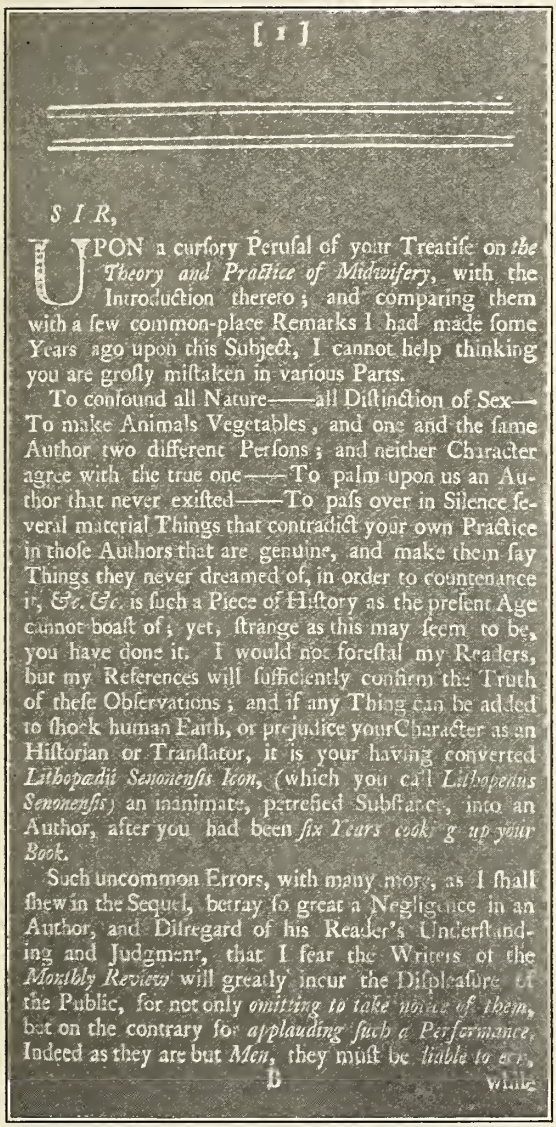
Alex. F. Robertson, Jr.

Bibliotheca Obstetrica

Burton.

Burton (John) 1697 [1697-1771]. A letter to William Smellie, containing critical and practical remarks upon his treatise on the theory and practice of midwifery; wherein the various gross mistakes and dangerous methods of practice mentioned and recommended by that writer are fully demonstrated and generally corrected, likewise the several advantages or dangers, to both mother and child, attending the turning the last in the womb to

extract by the feet, or that accrue from the use of each particular kind of instrument employ'd in delivering women, are shown in a more ample manner than heretofore xii, 250 pp. 12°. *London*, W. Owen, 1753. *For Biography see* Doran (A) Burton ("Dr. Slop"); his forceps and his foes, J. Obst. & Gynaec. Brit. Emp.



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SIR,

UPON a curſory Peruſal of your Treatiſe on *the Theory and Practice of Midwifery*, with the Introduction thereto; and comparing them with a few common-place Remarks I had made ſome Years ago upon this Subject, I cannot help thinking you are groſly miſtaken in various Parts.

To confound all Nature——all Diſtinction of Sex—To make Animals Vegetables, and one and the ſame Author two different Perſons; and neither Character agree with the true one——To palm upon us an Author that never exiſted——To paſs over in Silence ſeveral material Things that contradict your own Practice in thoſe Authors that are genuine, and make them ſay Things they never dreamed of, in order to countenance it, *&c. &c.* is ſuch a Piece of Hiſtory as the preſent Age cannot boaſt of; yet, ſtrange as this may ſeem to be, you have done it. I would not foreſtal my Readers, but my References will ſufficiently confirm the Truth of theſe Obſervations; and if any Thing can be added to ſhock human Faith, or prejudice your Character as an Hiſtorian or Tranſlator, it is your having converted *Lithopædii Senonenſis Icon*, (which you call *Lithopedus Senonenſis*) an inanimate, petrefied Subſtance, into an Author, after you had been *ſix Years cooking up your Book.*

Such uncommon Errors, with many more, as I ſhall ſhew in the Sequel, betray ſo great a Negligence in an Author, and Diſregard of his Reader's Underſtanding and Judgment, that I fear the Writers of the *Monthly Review* will greatly incur the Diſpleaſure of the Public, for not only *omitting to take notice of them*, but on the contrary for *applauding ſuch a Performance*. Indeed as they are but *Men*, they muſt be *liable to err*, while

B

Photostat of first page of letter from Burton to Smellie.

1913, xxiii, 3; 65; 4 pl.—Osler (Sir W.) John Burton the Man-Midwife of York ["Dr. Slop"]. Canad. M. Ass. J., 1913, iii, 612.

In the preface of his *theory and practice of midwifery* published in 1751, Burton characterizes the obstetrical literature of the day as being worthless, written chiefly for self-advertisement, and of no benefit to the public. Yet within two years he publishes a 250 page letter to William Smellie. This is probably the most elaborate of the *letters* that seemed to be so much in vogue at the time the obstetrical forceps were coming into general use. Some idea of its style can be had from its first page which is here reproduced. It has not the crudeness and vulgarity of some of the other *letters* of the time. You can readily believe him to have been the "gentleman and a scholar" that Alban Doran says he was. He must also have been a good hater to have wasted so much effort on the 250 pages of the letter. The gentler side of his nature is seen in his labor for the York Infirmary of which he was the founder, and which still continues his philanthropic work.

Miscellaneous

Copy of Re-Enacted Sections of the Medical Practice Act of Virginia.

(Acts of the General Assembly of Virginia, 1928.)

This Bill, as Amended, Goes in Force June 17, 1928.

A BILL

To amend and re-enact the following sections of the Code of Virginia: 1612, 1613, 1614, 1615, as amended; 1616, as amended; 1617, 1618, 1619, 1621, 1622, 1623, 1639, relating to the regulation of the practice of medicine, and to repeal Section 1620.

1. Be it enacted by the General Assembly of Virginia, That the following sections of the Code of Virginia, sixteen hundred and twelve, sixteen hundred and thirteen, sixteen hundred and fourteen, sixteen hundred and fifteen, as amended, sixteen hundred and sixteen, as amended, sixteen hundred and seventeen, sixteen hundred and eighteen, sixteen hundred and nineteen, sixteen hundred and twenty-one, sixteen hundred and twenty-two, sixteen hundred and twenty-three, sixteen hundred and thirty-nine, be amended and re-enacted so as to read as follows:

Sec. 1612. Every certificate to practice medicine, homeopathy, osteopathy, chiropractic and chiropody granted under the provisions of this chapter shall, before the licensee begins to practice thereunder, be presented by him to the clerk of the circuit court of the county or the corporation court of the city wherein such practice is to be carried on. The clerk of each of said courts shall keep a book for the purpose, entitled the "medical register," and set apart one full page therein for the registration of each licensee, and he shall record therein the name, residence, place and date of birth and source, number and date of the license to practice, and the school of practice to which each licensee professes to belong, and each licensee shall subscribe and verify under oath the matters above mentioned

when the same have been so recorded, which, if wilfully false, shall subject the person so making oath to conviction and punishment for false swearing, as provided by law. The fact of such oath and record shall be endorsed by the said clerk upon each certificate presented, and the clerk shall receive the sum of one dollar from each licensee so registered, which shall be his full compensation for all duties required under this chapter. The holder of a certificate to practice medicine, homeopathy, osteopathy, chiropractic and chiropody shall have the same recorded upon each change of residence to another county or city, and the absence of such record shall be prima facie evidence of the want of possession of such certificate. In such counties and cities as may require a yearly license issued by the commissioner or other officer, it shall be the duty of said commissioner or other officer, to require the licensee to furnish a certified statement that he or she has registered his or her certificate in accordance with section sixteen hundred and twelve, and in the absence of such statement it shall be unlawful for said commissioner or officer to issue a license. When any licensee shall die or remove from the county or city, or have his certificate revoked, it shall be the duty of said clerk to make a note of the facts at the bottom of the page of the said licensee as closing his record. On the first day of January in each year said clerk shall, on the request of the board, certify to the secretary thereof a correct list of the licensees then registered in the county or city, together with such other information as said board may require. Any clerk, commissioner or other officer, upon conviction of knowingly violating any provision of this chapter shall be fined not more than fifty dollars for each offense. A copy of the "medical register" pertaining to any person certified to by a clerk, under seal of court; also a certificate issued by said clerk, certifying that any person named has or has not registered in his office, as required by this chapter, shall be admitted as evidence in all courts of this State.

Sec. 1613. Legal practitioners of medicine, homeopathy, osteopathy, chiropractic practicing under the provisions of previous laws who have not already received a license from the State Medical Examining Board of this State, shall present to the board documents sufficient to establish the existence and validity of a diploma granted to each by some bona fide college of medicine, homeopathy, osteopathy and chiropractic, or to establish their exemption existing under any law, and shall receive from the said board a verification license, which shall be recorded in the clerk's office of the circuit court of the county or corporation court of the city in which the licensee resides, and duly endorsed by said clerk. Such verification license shall be issued for a fee of fifty cents to all practitioners so qualifying who have not already received a license from a board of medical examiners of this State. It is especially provided that those whose claims to State license rest upon having practiced in the State previous to the year eighteen hundred and eighty-five, shall present to the board satisfactory evidence of having legally practiced medicine in this State before that year, or if an osteopath, before the year nineteen hundred and three, or if a chiropractor before the year nineteen hundred and thirteen. The board may, at its discretion, arrange for reciprocity with the authorities of other States, territories and countries having requirements equal to those established by this chapter, and may, at its discretion, issue such certificate to applicants upon endorsements of boards of States with which reciprocal relations have not been established, provided credentials of applicant are satisfactory, and provided further that his or her school of graduation and his or her grades be deemed fully equal to those required by the Virginia board. The board of medical examiners may accept in lieu of its own examination the certificate of the National Board of Medical Examiners, the fee for which shall be the same as that required for reciprocity. Certificates may be granted applicants to practice under such reciprocity on payment of a fee of fifty dollars to the secretary of the board. The president may, upon recommendation of the reciprocity committee and with the consent of the executive committee, issue certificates to such applicants as are entitled to reciprocity under this chapter at any time, whether the board is in session or not. Legal practitioners who have lost their State board certificates shall obtain duplicate certificates by furnishing to the secretary of the board satisfactory proofs of the issuance to the individual of the former certificates, and upon payment of a fee of one dollar, and the new certificates when issued shall be registered as hereinbefore provided for original licenses.

Sec. 1614. The State Board of Medical Examiners, or any member thereof, shall have the power at any time to inquire into the identity of any person claiming to be a licensed or registered practitioner, and after due service upon such person of a notice in writing, require him to make reasonable proof, satisfactory to the board, that he is the identical person licensed to practice medicine, homeopathy, osteopathy, chiropractic and chiropody under the license by virtue of which he claims the right to practice. If, after such inquiry, it is found that the person is practicing wrongfully, or if after due investigation by the above named authorities, or any one of them, any person whomsoever is found violating any of the provisions of this chapter, it shall be the duty of such investigator to transmit to the Commonwealth's attorney of the county or city wherein such person resides, or is or has been practicing or attempting to practice, all the evidence in his possession tending to establish such violation of this chapter, and it shall be the duty of the said Commonwealth's attorney to immediately prosecute such person for violation of this chapter, if, in his opinion, the evidence so presented is sufficient to convict, and upon trial the burden of proof shall be upon the defendant to prove his right to practice. The circuit court of the county wherein the offense is committed shall have original jurisdiction concurrent with the justices of said county in the trial of such person for such offense, and the corporation courts of the several cities of this Commonwealth shall have original jurisdiction concurrent with the police justices of such cities. The State Medical Examining Board may refuse to admit to examination or reciprocity, or to grant a certificate provided for in this chapter, to a person guilty of unprofessional, dishonest, or immoral conduct, and may revoke or suspend a certificate for like cause or causes.

The words "unprofessional conduct," as used in this act, are hereby defined to mean any of the following acts, to-wit:

(a) A practitioner of medicine, homeopathy, osteopathy, chiropractic or chiropody, who is guilty of any crime or misdemeanor or who is guilty of any fraud or deceit by which he was admitted to practice; or

(b) Is an habitual drunkard or habitually addicted to the use of morphine, opium, cocaine or other drugs having a similar effect; or

(c) Who undertakes or engages in any manner or by any ways or means whatsoever, to procure or perform a criminal abortion, as the same is defined by the law of this State.

(d) Prescribing or dispensing morphine, cocaine, or other narcotics or alcoholics with intent or knowledge that same shall be used otherwise than medicinally or with intent to evade any law relative to the sale, use or disposition of such drug.

(e) All advertising of medical business in which grossly improbable or extravagant statements are made, or which have a tendency to deceive or defraud the public, or impose upon credulous or ignorant persons, or in which mention is made in such advertisements of venereal diseases, diseases or disorders of the genito-urinary organs or chronic ailments.

(f) Violations of Section sixteen hundred and thirty-nine of the Medical Practice Act.

(g) Advertising or professing to treat human ailments under a system or school of treatment or practice other than that for which he or she holds a certificate, or advertising that he or she can cure or treat diseases by a secret method, procedure, treatment or medicine.

Any applicant who may be refused admittance to examinations before said board, or who may be refused a certificate by said board, or who may have his certificate revoked by said board shall have his right of action to have such issue tried by the circuit court of the county or the corporation court of the city within whose jurisdiction he may reside, and the proceedings to try such issue shall be begun by the filing of a petition by such person in such court reciting the facts and making the said board the party defendant; whereupon after due service of process upon the member of said board residing in the congressional district in which said county or city is located, at least ten days before the trial, the court shall proceed to try the issue, the burden of proof being upon the petitioner to establish his right to be examined, to be granted certificate or to practice. It shall be the duty of the Commonwealth's attorney of the said county or corporation to appear on behalf of the board and to file any answer that he may deem expedient on its behalf, and to defend the said action before the court. The judgment of the court upon the issue tried shall be final. The board, or any member thereof, may investigate any person practicing or attempting to practice, or opening an office for the ostensible purpose of practicing medicine, homeopathy, osteopathy, chiropractic and chiropody in this State, and may require such person to produce his certificate granted by the board, or document sufficient to establish his right to practice medicine, homeopathy, osteopathy, chiropractic and chiropody under this chapter, and, in case such person fails or refuses to prove his right to practice, the investigator shall report the case to the Commonwealth's attorney of the county or city wherein such person is practicing or attempting or offering to practice, and it shall be the duty of such Commonwealth's attorney to immediately prosecute such person for violating this chapter, and upon the trial of such person the burden of proof shall be upon him to establish his right to practice.

Where the license of any person has been revoked, or his registration has been annulled as herein provided, the board may, after the expiration of twelve months, upon the payment of a fee of five dollars, entertain an application for a new license, and in like manner as original applications for license are entertained and upon such new application they may, in their discretion, exempt the applicant from the necessity of undergoing an examination.

Sec. 1615. All applicants for certificates to practice medicine, homeopathy, osteopathy and chiropractic in this State after the passage of this act, must successfully pass an examination before the Board of Medical Examiners, established by this act. The said board shall admit to examination any candidate who pays a fee of twenty-five dollars, and submits evidence verified by affidavit and satisfactory to the board, that he or she

(a) Is twenty-one years of age or more, and who has not at any time been guilty of unprofessional conduct as defined in Section sixteen hundred and fourteen.

(b) Is of good moral character.

(c) Had prior to beginning of his or her first year of medical study the general education required preliminary to receiving the degree of Bachelor or Doctor of Medicine in this State. This preliminary education shall meet the requirements of the Board of Education of the State of Virginia, and a certified statement from the superintendent of said board shall accompany the candidate's application.

(d) Has studied medicine not less than four school years, including four satisfactory courses of at least eight months each in four different calendar years in a medical school registered as maintaining a standard satisfactory to the State Board of Education. Such standard being based upon the grading of the American Medical Association, of the American Institute of Homeopathy, and of the American Osteopathic Association, respectively.

Virginia medical schools and Virginia medical students shall not be discriminated against by the registration of any medical school out of the State whose minimum graduation standard is less than that fixed by statute of Virginia medical schools.

The board may, in their discretion, accept as the equivalent of the first year of requirement (d) evidence of graduation from a registered college course; provided, that such college course shall have included not less than the minimum requirements prescribed by the board, and by the State Board of Education for such admission to advance standing.

The board may also, at their discretion, admit conditionally, to the examination in anatomy and histology, physiology, and embryology and chemistry, applicants nineteen years of age, or more, certified as having studied medicine at some registered medical college, not less than two years, including two satisfactory courses of at least eight months each, in two different calendar years, and in having passed in all those medical branches at the said college, but the said college must be registered as maintaining at the time a standard satisfactory to the State Board of Education, as above provided; provided, further, that such applicant must meet requirements (b) and (c). The board may also, at their discretion, accept as the equivalent of any part of requirements (c) and (d), five or more years of legal and reputable practice, and such candidate shall be exempted from taking examinations in anatomy and histology, and physiology, embryology and chemistry.

(e) Has either received the degree of Bachelor or Doctor of Medicine from some registered medical school, or a diploma or license conferring full right to

practice medicine in some foreign country, unless admitted conditionally to the examinations as specified above, in which case all qualifications, including the full period of study, the medical degree and the final examinations must be met. The degree of bachelor or doctor of medicine shall not be conferred in this State before the candidate has filed with the institution conferring it the certificate of the State Board of Education that before beginning the first annual medical course counted toward the degree, he had either graduated from a registered college or satisfactorily completed a full course in a registered academy or high school; or had a preliminary education considered and accepted by the State Board of Education as fully equivalent, or holds a State Board of Education medical student certificate, or passed State Board of Education examinations, securing sufficient academic counts, in accordance with the standard of the association of American Medical Colleges, the Council on Medical Education of the American Institute of Homeopathy or the American Osteopathic Association, respectively, or their full equivalent, before beginning the first annual medical course counted towards the degree; provided, however, that when an applicant has failed to pass a satisfactory examination, he may appear before the board again once within one year, without paying an additional fee; provided, that any person who shall produce before the said examining board a certificate from the judge of the circuit court and the Commonwealth's attorney of the county in which he resides, stating that in their opinion, from evidence produced before them, he was a practicing physician prior to the first day of January, eighteen hundred and ninety-five, practicing osteopath prior to the first day of January, nineteen hundred and three, or a practicing chiropractor prior to the first day of January, nineteen hundred and thirteen, then said examining board shall give to said person a certificate allowing said person to practice medicine in Virginia.

Sec. 1616. The funds realized from all fees collected by the board shall be accounted for and shall be paid into the State treasury. Each member of the board, except the secretary, shall receive eight dollars for each day actually employed in the discharge of his official duties, together with all necessary expenses incurred. The secretary of the board shall receive, in addition to necessary expenses, an annual salary, to be fixed by the board, not exceeding one thousand dollars. The compensation and expenses of the members, and the necessary expense of the board shall be paid out of the State treasury, on a requisition signed by the President and secretary of the board, and upon the warrant of the Comptroller.

Sec. 1617. All examinations shall be conducted in writing, together with practical tests, when the majority of the board may deem necessary, in such manner as shall be entirely fair and impartial to all individuals and every school of medicine, the applicants being known by numbers, without names or other method of identification on examination papers, by which members of the board may be able to identify such papers until after the applicants have been granted certificates or rejected. Upon satisfactory examination, under the rules of the board, applicants shall be granted certificates to practice medicine, homeopathy, osteopathy or chiropractic. All certificates shall be attested by the signature and seal of the president and secretary of the board, respectively.

Sec. 1618. Nothing in this chapter shall be construed to affect commissioned or contract medical officers, serving in the United States Army, Navy or public health and marine hospital service, while so commissioned and in the performance of their duties, but such shall not engage in private practice without license from the board of medical examiners of the State and the board may issue certificates of qualification without examination to medical officers in the public service of the United States on presentation of satisfactory credentials, the fee for which shall be the same as for reciprocity. On the face of these certificates it must appear that they were issued pro forma, and without examination. This chapter shall not affect any person while actually serving without salary or professional fees on the resident medical staff of any legally incorporated hospital, or any legally registered dentist exclusively engaged in practicing dentistry, or any legally registered optometrist exclusively engaged in practicing optometry, or any non-itinerant person or manufacturer who mechanically fits or sells lenses, artificial eyes, limbs or other apparatus or appliances, or is engaged in the mechanical examination of eyes for the purpose of adjusting spectacles, eyeglasses or lenses; or any lawfully qualified practitioner from other States, territories or countries meeting legally registered practitioners in this State in consultation, but who does not open offices or appoint places in this State where patients may be met or called to be seen; or to limit it any way the manufacture or sale of proprietary medicines by licensed druggists in this State; or to the furnishing of medical assistance in cases of emergency; or to the domestic administration of family remedies; or to the practice of the religious tenets of any church in the ministration to the sick or suffering by mental or spiritual means without the use of any drug or material remedy, whether gratuitously or for compensation, provided sanitary laws are complied with; or to affect or interfere in any way with the operation of any hospital now established in this State; or to any person while engaged in conducting such hospital now established, if there be a licensed practitioner resident or practicing therein; or to nurses who practice nursing only; or to masseurs, in their particular sphere of labor, who publicly represent themselves as such. This chapter shall be construed to apply to persons not pretending to be physicians, who offer for sale on the streets or other public places or leave gratuitously at residence, remedies which they recommend for the healing or curing of diseases. This chapter shall be construed to repeal all acts or parts of acts authorizing conferment of any degree in medicine causa honoris or ad eundem gradum or otherwise than on students duly graduated after satisfactory completion of a preliminary medical course, not less than that required by this chapter as a condition of license. It is further provided that graduates of any sectarian school of medicine who profess to practice medicine according to the tenets of said schools shall fulfill all the conditions of the board and of the State Board of Education, save that they may be exempted from taking the examination of the regulars on practice of medicine, materia medica and therapeutics. A license to practice such sectarian school of medicine shall not permit the holder thereof to administer drugs or practice surgery unless he has qualified himself so to do by examination before the board, nor shall it permit members of such sectarian schools now practicing in this State to perform surgery with the use of instruments unless they satisfy the board

that they have had adequate clinical facilities at their respective colleges of graduation, or by hospital work, to enable them to perform such operation.

Sec. 1619. Definition of chiropody. The word chiropody shall, for the purpose of this chapter, include the term podiatrist, and be held to be the medical, mechanical or surgical treatment of the local ailments of the human hand or foot, except the correction of deformities through the use of the knife, amputation of the foot, hand, toes, fingers, or incisions involving deep structures, or the use of anaesthetics other than local.

Sec. 1621. Examination of applicants to practice chiropody. All persons desiring to practice chiropody in this State from this date shall be examined by the State Board of Medical Examiners on the following subjects: Anatomy and physiology of the feet, pathology, materia medica, therapeutics, chemistry, minor surgery, and bandaging, and shall submit evidence, verified by oath, to the board, that they are twenty-one years of age or over, of good moral character, and have been graduated from a school of chiropody, or equivalent institution recognized by said board, having a minimum requirement of two scholastic years' course of at least eight months each. The educational requirements admitting persons to take examinations shall be equivalent to a grammar school and four years' high school course. The places at which examinations will be held and the dates thereof shall be fixed by the State Board of Medical Examiners. The fee charged for examination shall be twenty dollars. It shall be unlawful for any person to designate himself or his occupation by the use of any words or letters or trade diplomas calculated to lead others to believe that he is a chiropodist or foot specialist unless he is duly licensed as provided by law.

Sec. 1622. Any person shall be regarded as practicing medicine within the meaning of this chapter (1) who opens an office for such purpose, or announces to the public in any way a readiness to practice medicine in any county or city of the State, or prescribe for, or give surgical assistance, diagnosis or treats, heals, cures, or relieves those suffering from injury or deformity or disease of mind or body, or advertises, or announces to the public in any manner a readiness or ability to heal, cure or relieve those who may be suffering from injury or deformity, or disease of mind or body for a compensation; (2) or who shall use in connection with his name the words or letters "Dr.," "Doctor," "Professer," "M. D." or "Healer," or any other title, word, letter or designation intending to imply or designate him as a practitioner of medicine in any of its branches, or of being able to heal, cure, or relieve those who may be suffering from injury or deformity or disease of mind or body. This section shall also apply to corporations.

Sec. 1623. Any person practicing medicine, homeopathy, osteopathy, chiropractic or chiropody in this State in violation of the provisions of this chapter, or otherwise violating the same, shall, upon conviction thereof, be fined not less than fifty dollars nor more than five hundred dollars for each offense, and in addition, may be imprisoned in the jail of the county or city in which convicted, for a term not exceeding six months, and for a second offense the punishment shall be a fine of not less than fifty dollars, or more than five hundred dollars and imprisonment of not less than thirty days nor more than one hundred and eighty days, and each day of such violation shall constitute a separate offense; and in no case shall the violator be entitled to recover anything for the services rendered. It shall be the duty of the clerk of the circuit court of the county, or the clerk of the corporation court of the city wherein such conviction is had, to report the fact of the same to the board of medical examiners, who shall thereupon annul the license of the person convicted, if said person was a licensed practitioner.

Sec. 1639. No surgeon or physician shall directly or indirectly share any fee charged for a surgical operation or medical services with a physician who brings, sends or recommends a patient to such surgeon for operation, or such physician for such medical services; and no physician who brings, sends, or recommends any patient to a surgeon for a surgical operation or medical services shall accept from such surgeon or physician any portion of a fee charged for such operation. Any physician or surgeon violating the provisions of this section shall be guilty of a misdemeanor.

Section 1620 is hereby repealed.

Proceedings of Societies

The Southwestern Virginia Medical Society

Held its semi-annual meeting in Marion, Va., March 29th and 30th, under the presidency of Dr. J. L. Early, of Radford. The usual subscription banquet was held on the first night and there was a good scientific program. Dr. E. G. Gill, Roanoke, is secretary-treasurer, and Dr. D. M. Sanders, Chilhowie, vice-president. Dr. Z. V. Sherrill, Marion, was chairman of the Local Committee of Arrangements. Drs. M. C. Newton, of Narrows, and Ira C. Long, of Radford, were elected members. The next meeting is to be in Wytheville, the latter part of September, at which time will be the annual election of officers.

The Halifax County Medical Society

Held its regular meeting in Halifax, Va., March 22nd, under the presidency of Dr. George A. Stover, of South Boston. Drs. E. L. Boone, of Scottsburg, and J. L. Walker, of South Boston, were elected to membership. The annual election of officers resulted as follows: President, Dr. J. D. Hagood, Clover; vice-president, Dr. J. B. Lacy, Nathalie; secretary-treasurer, Dr. J. A. Owen, Turbeville, (re-elected).

The Alexandria Medical Society,

At its annual meeting early this year, elected Dr. Llewellyn Powell president, Dr. W. Clyde West vice-president, and Dr. Peter B. Pulman secretary-treasurer. All officers are of Alexandria.

The University of Virginia Medical Society,

Held its fourth meeting, February 20, 1928, at the University of Virginia Hospital, Dr. W. E. Bray presiding.

Dr. L. T. Royster presented a case of probable lung abscess in a ten-month old infant, simulating tuberculosis, and another child with probable lung abscess simulating unresolved pneumonia. Discussion: Dr. J. H. Neff and Dr. Royster.

Dr. W. E. Bray presented two laboratory studies, one Schistosoma infection and the second specimens and lantern slides from a case of Linguatula serata from beef. Discussion: Dr. H. T. Marshall referred to Dr. Reynolds' recent observation of a new tongue worm in the frog.

The first of the papers of the evening was by Dr. Everett S. Sanderson "A Lipoid Extracted from the Scallop, Possessing Antigenic Properties in the Wassermann Reaction." Discussion: Dr. D. C. Smith.

The second paper was by Dr. W. H. Goodwin, "Subcutaneous Abdominal Injuries Due to Blunt Force."

The next meeting will be held at the University of Virginia Hospital on Monday, March 5th at 7:30. Members of the Virginia medical profession are invited.

The fifth meeting of the University of Virginia Medical Society was on March 5, 1928, at the University of Virginia Hospital, Dr. W. E. Bray presiding.

Dr. Thelma Brumfield read a paper upon "Five Cases of Unusual Peritonitis at Autopsy." (Paper will appear in the Monthly). In the discussion, Dr. Royster expressed it as his experience that peritonitis from umbilical infection in the newborn is much rarer than the authorities would lead one to believe. Drs. J. H. Neff and W. W. Koontz, discussing the peritonitis originating from a seminal vesicle, were doubtful as to the origin from this source, referring to its rarity and to the fact that the patient had an onset of lightning-like suddenness with epigastric pain and, at operation, abundance of pus in the upper abdomen. Dr. Neff also discussed the peritonitis arising by extension from a perinephric abscess, the first of the kind he has met with, and he gave interesting data from the history of this case. Drs. W. E. Bray, Bruce Morton, and H. T. Marshall discussed the small cysts over the uterine serosa in the case of peritonitis originating from Fallopian tubes. Drs. R. H. Meade and Marshall discussed the cystic outgrowths of mucosa in salpingitis from which the peritonitis arose in one of the cases reported by Dr. Brumfield.

Dr. Allen Voshell presented a paper upon "Physical Therapy" (paper to appear in later issues of the Monthly), in which he discussed the recent developments along these lines at the University of Virginia Hospital. In his paper he discussed the applications of massage, exercise, electricity, light and radiation, and hydrotherapy, giving examples and statistics with results hitherto obtained with the use of these measures at the University of Virginia Hospital. Discussion on this paper was entered into by Drs. Homer Smith, L. A. Calkins, J. C. Flippin, Cuthbert Tunstall, V. W. Archer, and D. C. Smith.

The next meeting of the Society will be at the University of Virginia Hospital. Members of the Medical Society of Virginia are invited to attend.

Woman's Auxiliary, Medical Society of Virginia

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary and Treasurer, Cottage Toll Road, R. F. D., Norfolk, Va.

An Appeal for Virginia.

This year's president of the Woman's Auxiliary to the American Medical Association, Mrs. John Oliver McReynolds, of Dallas, Texas, The Mother of the Organization, has given to the Auxiliary, during her term of administration, new inspiration and a wonderfully increased zeal for service.

She has also brought to the aid of the Auxiliary and has been able to obtain the interest of some of the greatest men in the medical profession, as well as their wives, who have become staunch friends of the organization and are most enthusiastic workers in the "quest for better health for all the people".

These women have come into the Auxiliary with the determination to impress upon the public a proper conception of the real mission

of organized medicine and to tell its true story to the people.

We hear doctors who do not understand our work say, "This is just another Woman's Club, formed for entertaining, etc."; and it was also said that the Auxiliary was formed to create a better friendship among the doctors' families. But one is forced to realize that the Auxiliary was organized for something greater and more far-reaching than mere entertainment. It has succeeded in stamping its name upon the pages of history. Already some other nations are thinking of organizing in their own countries.

Medical Science has made wonderful strides in knowledge and discoveries, all of which have been offered freely to the world as a contribution from the medical profession. The United States may truly be called "Leader of the World" in organization and methods of Preventive Medicine.

But what good is all this unless it is made plain to our people?

During the last few years many of the leaders of medical science have given serious consideration to the subject of public health education. These men have become alive to the fact that *physicians only* are qualified, by heritage, by education and by experience, to give to the public the knowledge they hold, but these busy doctors have not the time to stop to educate the public or tell the people how to keep well.

It is the Woman's Auxiliary filling that gap, as it does, between the leaders in medical science and the public, who carry this message of the healing art to the people, by means of authoritative health programs, these programs being developed under the direction of the medical advisors.

The Auxiliary, by setting forth that which has been proven, renders a double service to human kind and the medical profession:

1. In conserving of physical health and preventing human ills.

2. In exposing those who are posing as possessed of ability to treat diseases by means that are scientifically valueless.

The Auxiliary members in their clubs, churches, schools and other organizations have a great opportunity to give to the public the basic principles of health preservation and the protection of life that is afforded by sanitation and all the phases of preventive medicine. A great deal of good has been done by teaching to all the value of wholesome living and frequent consultation with their *own* family doctors. This will go much farther toward maintaining good health than the treatment of disease.

The Auxiliary is indebted to Mrs. McReynolds for having conceived the idea of this great work which is going forward with tremendous force and is a lasting monument to a wonderful woman, whose vision embodied in the spirit of service, quickly awakened the interest of earnest, cultured women, who have led the organization to success.

It was Mrs. McReynolds also who went before the House of Delegates to ask the Trustees of the American Medical Association to approve an Advisory Council to guide and assist the Auxiliary in all matters of importance, and to outline and approve all health programs. This Advisory Council, composed of six of the master minds in the profession, has been of untold assistance to the National Auxiliary.

It is hoped that soon each county and each State Auxiliary will have its own Advisory Council, appointed by the officers or trustees of each medical society.

The Auxiliary to the Medical Society of Virginia would like to have the complete cooperation and approval of *every doctor in the State* for, without recognition by the doctors themselves, it is impossible to interest the women members of their families. The Auxiliary wants to urge every doctor's wife, mother, sister and daughter in Virginia to feel it is her duty to become a member of the Auxiliary in an organized effort to support and assist the medical profession.

Let us in our own state "get the vision." Let us be informed about health conditions in our counties and on the present Medical Practice Act; then we can go to our clubs, church societies, mothers' meetings and parent-teacher meetings, feeling that others are looking to us in a health way and we will be prepared to answer inteligently questions and arguments, and we can explain "fake cures."

Let us take Mrs. McReynolds as an example, and get behind our husband's profession and work. Join your auxiliary at once. If there is not one in your county, send in your name and dues to Mrs. E. F. Truitt, and become a member of the State and National Auxiliary.

The Old Dominion has always been a leader. Why not in this crusade for health and same medicine?

ALICE LEIGH.
(*Mrs. Southgate Leigh.*)

The Truth About Medicine

In addition to the articles enumerated in our letter of January 28th, the following have been accepted:

Hollister-Stier Laboratories

Alder Pollen Extract—Hollister-Stier; Aspen Pollen Extract—Hollister-Stier; Atriplex Pollen Extract—Hollister-Stier; Awnless Brome Grass Pollen Extract—Hollister-Stier; Blue Bunch Grass Pollen Extract—Hollister-Stier; Box Elder Pollen Extract—Hollister-Stier; Canada Blue Grass Pollen Extract—Hollister-Stier; Cheat Pollen Extract—Hollister-Stier; Common Sagebrush Pollen Extract—Hollister-Stier; Crested Koeleria Pollen Extract—Hollister-Stier; Dandelion Pollen Extract—Hollister-Stier; Eastern Ragweed Pollen Extract—Hollister-Stier; English Plantain Pollen Extract—Hollister-Stier; Giant Poverty Weed Pollen Extract—Hollister-Stier; Kentucky Blue Grass Pollen Extract—Hollister-Stier; Lamb's Quarter Pollen Extract—Holliter-Stier; Mugwort Pollen Extract—Hollister-Stier; Orchard Grass Pollen Extract—Hollister-Stier; Perennial Rye Grass Pollen Extract—Hollister-Stier; Quack Grass Pollen Extract—Hollister-Stier; Red Top Pollen Extract—Hollister-Stier; Redroot Pigweed Pollen Extract—Hollister-Stier; Russian Thistle Pollen Extract—Hollister-Stier; Sandberg's June Grass Pollen Extract—Hollister-Stier; Sheep Sorrel Pollen Extract—Hollister-Stier; Spring Birch Pollen Extract—Hollister-Stier; Timothy Pollen Extract—Hollister-Stier; Velvet Grass Pollen Extract—Hollister-Stier; Western Ragweed Pollen Extract—Hollister-Stier; Willow Pollen Extract—Hollister-Stier.

Maltbie Chemical Co.

Compound Syrup of Calcreose.

NEW AND NONOFFICIAL REMEDIES

Liver Extract No. 343.—A water-soluble, nitrogenous, non-protein fraction obtained from fresh mammalian liver, manufactured under direction of the Committee on Pernicious Anemia of the Harvard Medical School. It is supplied in vials containing an amount of powdered extract (3 to 4 Gm.) representing 100 Gm. of fresh liver. Liver Extract No. 343 is used in the treatment of pernicious anemia. Only preliminary observations have been made concerning its value in conditions other than pernicious anemia; apparently it is of value in some other types of anemia, but definitely seems to be of little or no value in many cases of ordinary secondary anemia. Liver Extract No. 343 is administered orally. Eli Lilly & Co., Indianapolis. (Jour. A. M. A., February 4, 1928, p. 385).

Compound Syrup of Calcreose.—A syrup containing in 100 c.c. calcreose solution (New and Nonofficial Remedies, 1927, p. 123) 33.3 c.c.; alcohol, 5 c.c.; extractives from wild cherry, 4 Gm. (20 grains per fluid ounce); chloroform, 0.6 c.c. (3 minims per fluid ounce); peppermint and other aromatic drugs. Maltbie Chemical Co., Newark, N. J.

Anterior Pituitary Desiccated—Lederle.—The anterior lobe of the pituitary gland of cattle, dried and powdered, without the addition of preservative or diluent. For a discussion of the actions, uses and dosage see Pituitary Gland, New and Nonofficial Remedies, 1927, p. 285. The product is marketed in the form of tablets containing 2 and 5 grains respectively. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., February 11, 1928, p. 463).

Posterior Pituitary Desiccated—Lederle.—The posterior lobe of the pituitary gland of cattle, extracted with acetone, dried and powdered. For a discussion of the actions, uses and dosage see Pituitary Gland, New and Nonofficial Remedies, 1927, p. 285. The product is marketed in the form of tablets containing 1/10 grain. Lederle Antitoxin Laboratories, New York.

Whole Pituitary Desiccated—Lederle.—The pituitary gland of cattle, including the infundibulum and the anterior and posterior lobes, dried and powdered, without the addition of preservative or diluent. For a discussion of the actions, uses and dosage see Pituitary Gland, New and Nonofficial Remedies, 1927, p. 285. The product is marketed in the form of tablets containing 1 and 3 grains, respectively. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., February 18, 1928, p. 545).

PROPAGANDA FOR REFORM

Dietary Deficiencies and Infection.—A study has been made attempting to correlate the production of rickets with the susceptibility to tuberculosis. In the white rat, rickets may be produced with comparative ease. On the other hand, this animal is highly resistant to tuberculosis when the organisms are given subcutaneously. Young rats were fed on rations presumably adequate with the exception of calcium and the antirachitic factor. Rickets regularly appeared, more readily in cloudy weather than in bright. In the group of these animals injected with tuberculosis organisms the disease could be demonstrated. The series given the defective ration alone developed rickets but no tuberculosis, while doses of the infecting organisms many times larger than those used in the rachitic group failed to induce tuberculous lesions in a number of rats given an adequate ration. Similar results were obtained when the experimental ration lacked only vitamin D for several generations. Rickets was produced and with it a susceptibility to tuberculosis. (Jour. A. M. A., February 4, 1928, p. 386).

Bathroom Heater as a "Patent Medicine."—Electric heaters, dignified by the name of infra-red generators and adorned with enamel and nickel, are being sold to the public at high prices as potent therapeutic agencies. The book of uses which always accompanies a bathroom heater when it is sold as a therapeutic agent, usually appears to be the work of one whose chief qualification was that he had access to a medical dictionary. True, these lamps generate infra-red rays, but so does a steam radiator or any other hot body. (Jour. A. M. A., February 4, 1928, p. 388).

Ricinoleated Scarlet Fever Toxin—Unofficial reports indicate that the ricinoleated toxin has not protected effectively against scarlet fever in several institutions in which it was given. Theoretically it hardly seems possible that a single dose would establish a lasting immunity, and it is hardly to be expected that the addition of a "detoxifying" agent will increase the immunizing properties of a toxin. Ricinoleated toxin does not appear to be as reliable as the five doses of the Dick toxin. (Jour. A. M. A., December 17, 1927, p. 2135).

So-Called Synergistic Analgesia.—The Council on Pharmacy and Chemistry has authorized publication of a report prepared by R. A. Hatcher, on the Gwathmey Method of Anesthesia, concerning so-called synergistic analgesia. The report states that a final opinion on the synergistic action of ether in oil with

magnesium sulphate requires a much more accurate knowledge than now exists concerning the potentiation in anesthetic and analgesic action and the lack of potentiation in the toxic actions such as Gwathmey claims to have found. The evidence for his claims is not convincing. It seems quite possible, however, that mangesium sulphate has some action that may be utilized to advantage in anesthesia when our knowledge of its mode of action with morphine and ether is much greater than it is at present. (Jour. A. M. A., December 24, 1927, p. 2189).

The Health Angle in Advertising.—The physician has become a prophet in the land, and health is the word with which one conjures. Regardless of the substance to be advertised, the agency goes forth in search of medical opinion with which to vaunt it. A soup is sold with the claim, "There is health in every spoonful." Of certain toilet accessories it is said, "Your doctor will advise against harsh, rough papers." Certified milk is called "health bottled in bond." And so it goes. The doctor's advice has been sought, it seems, for many of the most mundane affairs of human existence. The difficulty of evaluating advertising copy in these modern times is an evidence of the changing situation. The modern agency supports by evidence the claims for the products promoted. The presentation of such evidence often seems an exaggeration of conditions as they are, yet the evidence is almost invariably actual. No doubt physicians have been too ready to accept broad generalizations in the field of hygiene. They seldom require the same kind of evidence in support of a cleansing agent, a dietary product or tobacco that they would demand in support of a new remedy. Hence the promoters are easily able to secure the necessary number of medical endorsements. Fortunately the situation may take care of itself; the overdoing is certain to result in reaction. But if the great minds in the advertising agencies are wise, they will begin to reconsider now. Otherwise the good is likely to be lost with the evil. (Jour. A. M. A., December 24, 1927, p. 2195).

Analgesia in Childbirth.—The Council on Pharmacy and Chemistry has authorized publication of a report prepared by R. A. Hatcher, on the Gwathmey Method of Anesthesia, concerning analgesia in childbirth. The available evidence indicates that the use of morphine during the first stage of labor and ether or chloroform for the second stage appears to be the accepted procedure and that morphine with chloroform appears to present special dangers. With proper precautions, morphine sulphate in the dose of 0.01 Gm. (one-sixth grain) for a woman of average size, is virtually without danger. The report concludes that no method of inducing analgesia is suitable for universal use. So-called painless childbirth is frequently a most difficult problem. The general practitioner is often misled into believing that he can secure better results by the method that he reads about than by the methods with which he is familiar, when in truth it presents no essential advantage, and, on the contrary, it will prove inferior in his own hands to that with which he has acquired a certain degree of skill. In view of this, the commercial exploitation of proprietary products based on the Gwathmey formulas is potent for much harm, since it will inevitably tend to promote the thoughtless and ill-advised use of the method. (Jour. A. M. A., December 31, 1927, p. 2258).

The Composition of Procaine Borate (Borocaine). At the request of the Council on Pharmacy and Chemistry the A. M. A. Chemical Laboratory made an investigation of "Borocaine," marketed by Sharp & Dohme, particularly with a view of determining whether it presented sufficient novelty to permit recognition of the proprietary name. The study was made by George W. Collins, Sc. D., who concludes that the product marketed as "Borocaine" is procaine borate; that it is a definite chemical compound which is readily hydrolyzed when dissolved in water, and acts as an aqueous solution of boric acid to which has been added procaine (base). He concludes that it is not a hitherto undiscovered compound. (Jour. A. M. A., January 7, 1928, p. 25).

Nobro.—This is another phenobarbital (luminal) mixture sold as a cure for epilepsy. It is put out by the Nobro Medic Co., Worthington, Ohio, and sold on the mail-order plan. The individual behind this concern seems to be one Harry M. Freck, whose claim to medical knowledge appears to be based on the fact that he once operated the Freck Garment Company, and at present conducts the Freck Stenographic Bureau and an advertising circular-letter business. He has been connected with other "patent" medicines. Nobro comes in the form of pink capsules. The "course" consists of ninety capsules sold for four dollars. The A. M. A. Chemical Laboratory analyzed Nobro and reports that each capsule contains essentially 0 0414 Gm. (approximately 3/5 grain) of phenobarbital to which has been added lactose. (Jour. A. M. A., January 7, 1928, p. 49).

Desiccated Parathyroid Gland Preparations Omitted from N. N. R.—The general article Parathyroid Gland, in New and Nonofficial Remedies, 1927, states that there is no conclusive evidence for the oral use of parathyroid gland preparations. In 1926 the Council decided to omit all such preparations with the close of 1927 unless in the meantime evidence should develop to show that they were effective. No such evidence has developed. On the contrary, evidence in the opposite direction has become available. Accordingly, the Council directed the omission of all the accepted brands of desiccated parathyroid gland from New and Nonofficial Remedies. (Jour. A. M. A., January 14, 1928, p. 117).

Aseptones Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that under the noninforming but therapeutically suggestive name "Aseptones," the Scent-Ets Company, Brooklyn, markets a mixture stated to have the following composition: menthol, 0 40; salicylic acid, 2.00; sodium chloride, 60.00; zinc sulphate, *dried*, 65.00; alum, *dried*, 65.00; boric acid, granular, to make 500.00; tincture of cudbear, 2 c.c. The preparation is referred to as "the astringent and antiseptic Douche Powder." The Council found "Aseptones" unacceptable for New and Nonofficial Remedies because it is an unscientific mixture, marketed under a noninforming, therapeutically suggestive name, and without declaration of its quantitative composition. (Jour. A. M. A., January 14, 1928, p. 117).

The Dangers of Ultraviolet Rays.—Not only do barber shops swindle prospective victims of baldness with incandescent lamps colored purple, not only do electrical corporations sell, as untraviolet ray devices, contraptions delivering hardly any untraviolet radiation at all, but some manufacturers of apparatus actually delivering ultraviolet rays of potency endeavor to place these devices wherever a sale can possibly be made. Regardless of the fact that practically every method in medicine that may do good, can also do harm, these machines are being sold to bath institutes, swimming pools, massage parlors, beauty parlors, clubs, barber shops and innumerable other businesses in which medical supervision is certainly not probable, indeed, hardly possible. The sales are made notwithstanding the fact that scientific literature has already revealed that

the rays may in some instances be potent for harm. (Jour. A. M. A., January 14, 1928, p. 120).

John R. Brinkley—Quack.—In and from the little village of Milford, Kansas, John Richard Brinkley demonstrates the commercial possibilities of "goat-glands." He obtains his publicity through sensational articles in newspapers and by means of the privately owned radio broadcasting station KFKB. Those who write to the station are immediately put on the Brinkley "sucker list" and receive miscellaneous printed matter and a follow-up series of letters that, seemingly, never end. One of the advertising booklets sent out by Brinkley is entitled "The Compound Operation, or The Modern Passport to Successful Rejuvenation." It is claimed that "the Compound Operation is the best thing known for Impotency, high blood pressure, enlarged prostate sterility (anastamosing operation), Neurasthenia, Dementia Praecox, or any disease that is not malignant of the prostate." Those who get on the "sucker list" are urged to make reservation in the Brinkley "hospital" at the earliest possible time. Brinkley also has a "Special Gland Emulsion," which is another means of separating seekers of rejuvenation from their money. This is sold on the mail-order plan and one month's supply costs $100. (Jour. A. M. A., January 14, 1928, p. 134).

Diphtheria Toxoid (Anatoxine-Ramon).—This product, as prepared at the serum division of the Pasteur Institute by Dr. Ramon himself, has been successfully employed in immunization against diphtheria in France and other countries. No information is at hand as to the efficacy and safety of commercial preparations of diphtheria toxoid made in this country. The Council on Pharmacy and Chemistry of the American Medical Association has not accepted any of these preparations for inclusion in New and Non-official Remedies. (Jour. A. M. A., January 14, 1928, p. 139).

Erusticator.—The A. M. A. Chemical Laboratory reports on the composition of a poisonous rust remover. A physician had reported the death of a baby, who died ten minutes after biting into a tube of "Erusticator." The product is put out by the Sterling Products Company, of Easton, Pa. It was not labeled "Poison." Analysis showed that the preparation was essentially an aqueous solution of a mixture of ammonium and hydrogen fluorides (generally designated as ammonium bifluoride) equivalent to 26.3 per cent ammonium fluoride, and 16.9 per cent hydrogen fluoride. The sale of such poison without fair warning to the consuming public is to be deprecated. (Jour. A. M. A., January 21, 1928, p. 205).

Solvo Aspirin Not Acceptable for N. N. R.—Solvo Aspirin (Ess & Arch Co., Philadelphia), bears the declaration on the label that "Each teaspoonful contains 5 grains of aspirin in a soluble and convenient form with other suitable ingredients." In the information sent the Council on Pharmacy and Chemistry the following statement of composition was offered: "Solvo Aspirin is a solution containing five grains of Aspirin (Acetylsalicylic Acid), to each fluid dram, in a soluble form free from all precipitates combined with Glycerine, Elixir Aromatic, Distilled Water and Tincture Cudbear." In another communication, the preparation was declared to contain, in addition, two grains of sodium bicarbonate to each teaspoonful. The Council reports that from the information it is evident that the preparation is one in which the attempt is made to make acetylsalicylic acid more soluble by addition of sodium bicarbonate, and this despite the fact that it is well known, that, in the presence of water, acetylsalicylic acid reacts with sodium bicarbonate to form sodium acetylsalicylate, which in turn is hydrolyzed to sodium acetate and sodium salicylate. In consonance with this, the A. M. A. Chemical Laboratory reported that in a specimen submitted to examination, the acetylsalicylic acid was largely, if not completely, decomposed into sodium salicylate and sodium acetate. The Council declared Solvo Aspirin unacceptable for New and Non-official Remedies because it is an unscientific mixture, marketed under a misleading name, with an incorrect statement of composition and with unwarranted claims. (Jour. A. M. A., January 21, 1928, p. 205).

Laxative Action of Bran.—Experiments on the laxative action of wheat bran showed that this was due to the crude fiber (cellulose) which it contains. This crude fiber was found to be feces-forming; it had the power of producing more than its own weight of feces. This presumably takes bran out of the category of drugs and properly relegates it to the kitchen. Indeed, it has been suggested that only through use in the more palatable forms of cookery does bran really "cure" or take care of constipation. Even so, it has many limitations. (Jour. A. M. A., January 21, 1928, p. 206).

Some Effects of Synthalin.—Investigation by Blatherwick and his colleagues at the Santa Barbara Cottage Hospital in California demonstrated that synthalin administered by stomach tube failed to produce hypoglycemia in rabbits Subcutaneous and intravenous injections usually decreased the blood sugar. Acute nephritis is produced by parenteral administration. There is also injury of the liver, as shown by a decreased ability to deaminize subcutaneously injected glycine. Certainly caution should be exercised in the use of a drug showing such properties. Blatherwick points out that the hypoglycemia produced by synthalin may be due to a combination of at least two processes. One of these resembles the action of insulin and the other that of hydrazine. The latter substance appears to cause hypoglycemia by injuring the liver and thus preventing normal glyconeogenesis. Synthalin has apparently not yet met the prerequisites for rational use in the relief of diabetes. (Jour. A. M. A., January 21, 1928, p. 209).

More Misbraded Nostrums.—The following products have been the subject of prosecution by the Food, Drug and Insecticide Administration of the United States Department of Agriculture which enforces the Federal Food and Drugs Act: Chi-Ches-Ter's Diamond Brand Pills (Williams Manufacturing Company), containing iron sulphate and some vegetable drugs, including aloe. Depurativo Ruso Makharoff (Porto Rican American Drug Company), consisting essentially of potassium iodide, mercuric iodide, sodium sulphate, sarsaparilla extract and water. Malt-O-Cod (Fred Stearns), consisting essentially of sugar, alcohol and water, extracts of plant drugs, including quinine and strychnine, with compounds of phosphorus, iron, calcium, sodium and potassium, and a very small quantity of salicylates. Phosphated Iron (Relief Laboratory, Inc), consisting essentially of iron phosphate and carbonate, nux vomica extract and a laxative drug. Inyeccion Roja Martinez (Porto Rican American Drug Company), consisting essentially of zinc phenolsulphonate, alum, catechu and water. Alvita Tableta and Alvita Tea (California Alfalfa Products Company), the first containing vegetable extractives, oil of sassafras and celery, while the second consisted of ground alfalfa. Walnut Wine Prieto (Vino De Nogal) (Indian Laboratory Company), consisting essentially of a water-alcohol solution of sugar, glycerine, caramel, strychnine and plant material. Life Saver (M. Arizpe), an alcohol-water solution of sugars, glyce-

rine, acetic acid, saponin-like glucoside, and plant extractives. Amargo De Agave (Regional Medicine Company), an alcohol-water solution containing potassium iodide and plant drugs, including sarsaparilla. (Jour. A. M. A., January 21, 1928, p. 222).

Effects of Spring Waters.—The waters of Hot Springs, Virginia, are alkaline, earthy and sulphated, at temperature of from 108 to 112 F. Those of Hot Springs, Arkansas, are also alkaline and earthy, ranging in temperature from 76 to 148 F. The heat at which these waters are used is no doubt their most potent influence. These waters are radioactive, but a government expert after making an extensive survey of radioactive mineral waters, concluded that up to this time it has not been shown that the small amounts of radioactivity found in natural waters have any effect on the medicinal value of the waters. (Jour. A. M. A., January 21, 1928, p. 225).

Tophirin Tablets Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that "Tophirin Tablets (Bram Chemical Co, Philadelphia), is stated to contain in each tablet: "Acid Phenyl Cinchoninic (cinchophen), Gr. 3½; Magnesium Salicylate Gr. 3½; Colchicine, Alkaloid Gr. 1/400," but that no quantitative statement appears on the package or in the advertising. In the administration of cinchophen, the salicylate, and colchicum it is essential that these drugs be given in amounts suited to the individual case and patient. There is no evidence showing that the combined use of these drugs is of advantage. It is thoroughly irrational to administer cinchophen, magnesium salicylate and colchicine in fixed proportion. The Council found "Tophirin Tablets" unacceptable for New and Non-official Remedies because it is an irrational mixture offered to the profession without declaration of its quantitative composition and under a name which does not declare the potent ingredients but is therapeutically suggestive, and because it is sold with unwarranted claims and in a way which will lead to its ill-advised use by the public. (Jour. A. M A., January 28, 1928, p. 293).

Book Announcements

Diabetes. Its Treatment by Insulin and Diet. A Handbook for the Patient. By ORLANDO H. PETTY, A. M., M. D., F. A. C. P., Professor of Diseases of Metabolism, Graduate Schools of Medicine, University of Pennsylvania, etc. FOURTH REVISED AND ENLARGED EDITION. Philadelphia. F. A. Davis Company, Publishers. 1928. Small Octavo of 152 pages with Illustrations and Tables. Cloth. Price, $2.00 net.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on the Various Branches of Medicine and Surgery. By LEADING MEMBERS OF THE MEDICAL PROFESSION THROUGHOUT THE WORLD. Edited by HENRY W. CATTELL, M. D., Philadelphia, with Collaborators. VOLUME I. Thirty-eighth Series, 1928. Philadelphia and London. J. B. Lippincott Company. 1928. Octavo of 307 pages. Cloth.

Physical Diagnosis. By W. D. ROSE, M. D., Associate Professor of Medicine in the University of Arkansas, Little Rock, Ark. FIFTH EDITION. St. Louis. The C. V. Mosby Company. 1927. Octavo of 819 pages with 310 illustrations and 3 color plates. Cloth. Price, $10.00.

Gynecology for Nurses. By HARRY STURGEON CROSSEN, M. D., F. A. C. S., Professor of Clinical Gynecology Washington University Medical School, and Gynecologist in Chief to the Barnes Hospital, and the Washington University Dispensary, etc. St. Louis. The C. V. Mosby Company. 1927. Octavo of 281 pages, with 365 engravings, including one color plate. Cloth. Price, $2.75.

Strabismus. Its Etiology and Treatment. By OSCAR WILKINSON, A. M., M. D., D.Sc., Surgeon in Chief of Washington Eye and Ear Hospital, Washington, D. C. St. Louis. The C. V. Mosby Company. 1927. Octavo of 240 pages. Illustrated. Cloth. Price, $10.00.

Asthma. Its Diganosis and Treatment. By WILLIAM S. THOMAS, M. D., Associate Attending Physician in Immunology, St. Luke's Hospital, New York. Paul B. Hoeber, Inc., New York. 1928 Octavo of 279 pages, with 20 illustrations in black and white and 6 in color. Cloth. Price, $7.50 net.

Aluminum Compounds in Food. Including a Digest of the Report of the Reference Board of Scientific Experts on the Influence of Aluminum Compounds on the Nutrition and Health of Man. By ERNEST ELLSWORTH SMITH, Ph.D., M. D., Fellow and Former President, New York Academy of Sciences, etc. Paul B. Hoeber, Inc., New York. 1928. Octavo of 378 pages. Cloth. Price, $7.00.

Brain and Mind. Or The Nervous System of Man. By R. J. A. BERRY, M. D., F. R. C. S., F. R. S., Edin., Dean of the Faculty of Medicine and Professor of Anatomy, Including Histology, in the University of Melbourne; Honorary Psychiatrist to the Children's Hospital, Melbourne, and Consulting Psychiatrist to the Children's Welfare Department of the Government of Victoria, etc. New York. The Macmillan Company. 1928. Octavo of 608 pages. Cloth. Price, $8.00.

Practical Dietetics For Adults and Children in Health and Disease. By SANFORD BLUM, A. B., M. S., M. D., Head of Department of Pediatrics, and Director of the Research Laboratory, San Francisco Polyclinic and Post-Graduate School. THIRD REVISED AND ENLARGED EDITION. Philadelphia. F. A. Davis Company, Publishers. 1928. Octavo of 380 pages. Cloth. Price, $4.00 net.

The Springtime of Physick, being a Diverting Outline of Medicine and Surgery. BY LAURANCE D. Redway, M. D., Attending Ophthalmologist, North Westchester Hospital, Mount Kisco, N. Y.; Ophthalmic Surgeon, New York Central Railroad, etc. International Journal of Surgery Company, 18 East 41st Street, New York, N. Y. 1928. 12mo. of 68 pages. Cloth. Price, $2.00.

Mechanics and Chemistry of the Human Body. (A Sequel to "Colonic Therapy.") By O. BOTO SCHELLBERG, New York City. Published by the Schellberg Institute, Inc., 24 East 48th Street, New York City. 12mo of 50 pages, with 8 illustrations. Cloth. Price, $1.00.

Business Organization. No. 10 Sales Research. Policyholders Service Bureau, METROPOLITAN LIFE INSURANCE COMPANY. Home Office, New York. Pamphlet. Paper. 23 pages.

First Aid and Medical Service in Industry. Compiled from a Survey. Published by JOHNSON & JOHNSON, New Brunswick, N. J. Octavo of 136 pages. Illustrated. Cloth. Copy of volume will be sent to any physician interested in first aid and medical service in industry.

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Editorial

The Medical Practice Act.

House Bill No. 199 known as the Medical Practice Act, which passed both houses of the Legislature by an overwhelming vote and after careful scrutiny by the Attorney General's office was found to be entirely constitutional, was signed by Governor Byrd on March 29, 1928.

Virginia now has a medical law which safeguards her citizens from quacks, charlatans and imposters and places the care of their health in the hands of those only who shall have measured fully up to the standards of academic and professional training so essential to combating disease in accordance with the progress of modern science and art.

The General Assembly has this time realized more fully than ever before, that proper regulation of ministration to the sick or afflicted is not at all a procedure for the benefit of the medical profession but must be done to protect those who cannot be expected to distinguish between the real and the counterfeit. The successful passage of the law was chiefly due to the constant and untiring efforts of Dr. Lawrence T. Price, of Richmond, Chairman of the Commitee on Public Policy and Public Health, who was ably assisted by the other members of this committee, Drs. H. U. Stephenson, E. G. Williams, P. St. L. Moncure and J. M. Emmett together with Dr. E. H. Shackleford, Osteopath member of the State Board of Medical Examiners, and Mr. Robert H. Talley, attorney for the Medical Society of Virginia.

The credit for framing the law is due to our president, Dr. John W. Preston, who, as chairman of a special committee appointed by the Society, made a most exhaustive study of the medical practice laws of the various states and embodied in the new law the features deemed best and most suitable to conditions in Virginia. Dr. Preston was assisted in this work by the other members of his committee, Drs. H. U. Stephenson, J. Bolling Jones, T. S. Hening, P. E. Tucker, S. W. Maphis, G. A. Stover, Israel Brown, J. S. Horsley, E. G. Williams, A. L. Gray, L. T. Price, P. St. L. Moncure and J. Allison Hodges. The bill was sponsored and ably steered by its patron, delegate Ashton Dovell, of Williamsburg.

Some of the salient features of the new law are: 1. It applies with equal force not only to the so-called Regulars but to Homeopaths, Osteopaths and Chiropractors, exempting those who follow sectarian practice only from the regular examinations on Practice of Medicine, Materia Medica and Therapeutics, but requiring the registration of a diploma from a recognized School of Medicine, Homeopathy, Osteopathy or Chiropractic, awarded after four regular sessions of eight months each in four different calendar years, preceded by a premedical secondary school and college course equal to that required for the degree of Bachelor or Doctor of Medicine in this State.

2. It prohibits the issuance of certificates to any person that has been guilty of unprofessional, dishonest or immoral conduct and authorizes the Board of Medical Examiners to revoke or suspend a certificate for any one of these causes.

3. Unprofessional conduct is defined as being any of the following acts: One who is guilty of any crime involving moral turpitude or of fraud or deceit by which he was admitted to practice; is an habitual drunkard or addict to the use of morphine, opium, cocaine or other drugs having similar effect; who undertakes or engages by any ways or means whatsoever to procure or perform a criminal abortion; prescribing or dispensing morphine, cocaine or other narcotics or alcoholics with intent or knowledge that other than medicinal use will be made thereof or with intent to evade laws relative to sale, use or disposition thereof; advertising of medical business in which improbable or extravagant claims are made or which have a tendency to defraud the public, impose upon the credulous or ignorant or in

which mention is made of venereal diseases, disorders of the genito-urinary organs or chronic ailments; the practice of "fee splitting"; advertising or professing to treat patients under a system or school of treatment other than that for which he or she holds a certificate, or that he or she can cure or treat diseases by a secret method, procedure, treatment or medicine.

The law regards any person as practicing medicine who opens an office for such purpose, announces a readiness to practice medicine in the State, or prescribe for, give surgical assistance, diagnoses or treats, heals, cures or relieves those suffering from injury, deformity or disease of mind or body or advertises to this effect, thus preventing the establishment of commercial physio-therapeutic, pathological or X-ray laboratories conducted by other than the licensed medical practitioner.

The penalty fixed for violation of this law is prescribed, for the first offense, as a fine of not less than fifty nor more than five hundred dollars for each offense and in addition the offender may be imprisoned in jail, for a term not exceeding six months. A second offense carries a similar fine and compulsory imprisonment for not less than thirty days nor more than one hundred and eighty days, each day of such violation constituting a separate offense.

In addition to the passage of the Medical Practice Act, the pernicious statute which recognized Poropathy and created a school for training Poropaths was repealed.

In the opinion of this journal the medical profession of the State is to be congratulated on the work so ably and effectively carried out by Dr. Price, Dr. Preston and their associates and Mr. Dovell. The citizens of Virginia should be most grateful for what has been accomplished in their interest.

A. L. G.

The Isolation of Two Active Principles From the Posterior Lobe of the Pituitary Gland.

The isolation of two chemical substances from the posterior lobe of the pituitary gland by Kamm[1] and his co-workers (Aldrich, Grote, Rowe and Bugbee) gives the pituitary gland a possible place along with the adrenals and the pancreas, whose active principles have been isolated, and the parathyroid and thyroid active principles which are yet somewhat doubtful. The physiological action of posterior lobe extract, namely, the stimulating effect on the uterine muscle (oxytocic activity), its ability to raise blood pressure (pressor activity), and its diuretic-antidiuretic action (renal activity) has been experimentally proven. Kamm and his co-workers believing this extract to contain an active principle (or principles) of a chemical nature set about to analyze it, and isolated two chemical substances. Salting-out methods were used, followed by fractionalization with certain solvents and precipitants to obtain the active principles in the purest form possible under the present methods. The substances isolated have been termed a-hypophamine (oxytocic principle), and b-hypophamine (pressor principle), and are white, water-soluble powders of a stable nature. These workers presume these substances to be amines which are basic in reaction. In their hands, a-hypophamine has yielded an oxytocic strength 150 times that of the International Standard Powdered Pituitary, and b-hypophamine a pressor potency 80 times that of the Standard Powder. The combined solutions given an action identical with the original pituitary extract which according to the authors is sufficient proof that no decomposition has been produced during preparation. They also found the pressor principle produced a diuretic-antidiuretic action analogous to that of the ordinary active pituitary extracts.

That the work of Kamm and his co-workers is an advance in pharmacological research in the field of endocrinology is undeniable. Due credit and commendation should be given them. But, should these substances be presented to the medical profession based only on the foundation of preliminary work without further investigation as to the chemical nature and their pharmacological properties? The writer is cognizant of the importance of the work already done, but believes encouragement should be given to the further study of the substances that have been isolated before offering them for clinical use.

H. R. M.

1. Kamm, Aldrich, Grote and Bugbee, **Journal of American Chemical Society**, 50, 573. 1928.

If the day looks kinder gloomy
An' your chances kinder slim,
If the situation's puzzlin'
An' the prospect's awful grim,
An' perplexities keep pressin'
'Till all hope is nearly gone,
Jus' bristle up an' grit your teeth,
An' keep on keepin' on.—*Selected.*

News Notes

Danville Meeting, Medical Society of Virginia.

The Pittsylvania County and Danville Medical Society and the Danville Academy of Medicine have gotten actively to work to make our meeting in that city, October 16, 17 and 18, a success. It is the first time in many years that the Society has met in that city. Now, that Danville has a new hotel in addition to the accommodations formerly to be had, they are prepared to care for our meetings and it is hoped we will have a largely attended as well as an interesting session there next Fall. Begin talking it up in your societies and let's have a large delegation in Danville in October.

The following Committees have been appointed to take charge of the various affairs in connection with the meeting:

COMMITTEE ON ARRANGEMENTS

GENERAL CHAIRMAN—Dr. I. Carrington Harrison.

RECEPTION AND AUTOMOBILES — Dr. E. H. Miller, Chairman, Drs. C. L. Bailey, C. W. Pritchett, W. W. Robertson, S. E. Hughes, Sr., C. D. Bennett, Harry Pritchett, S. T. A. Kent.

BADGES, PRINTING AND PUBLICITY—Dr. R. W. Garnett, Chairman, Drs. W. B. Sager, J. C. Giles, W. O. Lee, Samuel Newman, R. W. Bennett, A. M. Owen, W. P. Parrish.

GOLF—Dr. C. L. Bailey, Chairman, Drs. W. O. Crumpler, J. W. Tipton, W. E. Jennings.

FINANCE—Dr. J. J. Neal, Chairman, Drs. J. A. Hawkins, S. E. Hughes, Sr., W. B. Fowlkes, John L. Nall, C. A. Easley, L. E. Fuller, G. O. Emerson.

ENTERTAINMENT—Dr. J. M. Robinson, Chairman, Drs. C. P. Howze, T. W. Edmunds, E. H. Miller, W. E. Jennings, O. L. Ramsey, J. C. Anderson, S. A. Reynolds.

COMMERCIAL AND SCIENTIFIC EXHIBITS—Dr. J. A. Hawkins, Chairman, Drs. Samuel Newman, J. T. Daves, L. A. Robertson, H. Inberg, S. E. Hughes, Jr., C. C. Grove, J. Gilmer Reynolds, J. E. Richardson.

HOTELS AND MEETING HALLS—Dr. P. W. Miles, Chairman, Drs. H. J. Langston, H. A. Wiseman, J. A. Tyree, C. T. Carter, W. C. Yeatts, M. E. Mease, W. J. Wigington.

LADIES—Mrs. T. W. Edmunds, Chairman.

The Clinch Valley Medical Society,

Composed of the countries of Buchanan, Dickenson, Lee, Russell, Scott, Tazewell and Wise, will hold its regular meeting in Tazewell, Va., April the 26th, as guests of the Tazewell County Medical Society. An elaborate program has been arranged. Invited guests who will present papers at this meeting are Drs. Garnett Nelson, Greer Baughman, E. G. Williams and John S. Horsley, Jr., all of Richmond. Dr. C. B. Bowyer, Stonega, is president, and Dr. J. C. Sutherland, Clintwood, secretary-treasurer.

Benefit for Crippled Children's Hospital.

On March 26th, one of the most modern theatres in the South was opened in Roanoke, Virginia. On this occasion, Mr. E. D. Heins, president, gave to the civic clubs of Roanoke control of the sale of tickets, the receipts from this sale being held in trust by a Board of Trustees of the clubs to be used for the hospitalization, or as a fund for the erection of a crippled children's hospital in Roanoke for the southwestern section of Virginia.

Over $16,000 was realized on the opening night. The entire expense was cared for by the National Theatre Corporation, of which Mr. Heins is president.

Dr. R. B. Ware,

Amherst, Va., was confined to his home for some time in March, due to a severe attack of sciatica.

Hospital Service in the United States.

Such is the caption of the seventh annual presentation of hospital data by the Council on Medical Education and Hospitals of the American Medical Association, which appeared in the March 24th issue of *The Journal of the American Medical Association.* The report is the result of the special census of hospitals taken in the past few weeks and is therefore up-to-date.

In addition to information of general interest, some facts about Virginia hospitals, of special interest to our readers, show that there are in Virginia a total of 75 general hospitals with a capacity of 5,698 beds, the percentage of occupancy being 60.7 as compared with 66 per cent of occupancy for all the general hospitals of the United States. There are ten nervous and mental hospitals in the State, with a capacity of 7,079 beds. The report shows a total of 118 registered hospitals with 15,271 beds, plus 530 bassinets, or a grand total capac-

ity of 15,801 beds for all the hospitals in the State.

The information tabulated about the hospitals of Virginia and other states will be quite interesting to those interested in hospital statistics.

St. Leo's Hospital,

Greensboro, N. C., at a staff meeting on March 22nd, elected Dr. Frank A. Sharpe president, for the coming year, and Dr. Allen C. Banner secretary-treasurer.

No 10-year-old Farm Laborers for Kincardineshire.

When application was made for sanction to a by-law for Kincardineshire, Scotland, to permit children of 10 years to do seasonal farm work such as "potato lifting," so much opposition was aroused that the matter was given up, and the minimum age for such employment remains at 12 years.

The Unmarried Mother.

The psychologist of the Minnesota State Board of Control reports that in a group of nearly 350 unmarried mothers whose children were born in Twin Cities hospitals during a recent year there was over four times as large a proportion of feeble-minded as among a group of some 7,000 school children. She estimates that about 2,000 children born out of wedlock were being supported by the State at an annual expense of approximately half a million dollars.

Dr. E. N. Lillard

Has returned to his home at Graves Mill, Va., after spending some time in southern Florida.

Child Health Day

Is to be observed in Virginia again this year. Health organizations throughout the State have been aroused to the value of this movement and programs to interest children and their parents in health and health-giving measures will be "put on" in various communities during the month of May. Suggestions for these programs may be secured, where so desired, upon application to the Department in Child Program of the State Board of Health, Richmond.

The fact that our State ranks low among other States of the Union in monetary expenditure for safeguarding mothers and young babies should be a stimulus for trying to reach mothers and the children through these May day exercises and securing their interest in health matters. It is stated that about three-fourths of the school children have preventable physical defects that retard school progress and handicap them in later life. Through the Child Health Days it is possible to reach a large proportion of these children.

Dr. Charles R. Robins

Has just returned to his home in Richmond, Va., after a visit to his brother in Havana, Cuba.

Dr. Harry Eaton Stewart,

Director of the New Haven, Conn., School of Physiotherapy, by invitation, presented a most interesting paper on "Modern Physiotherapy in Medical Practice" before the Richmond Academy of Medicine at its meeting on March the 27th.

Vital Statistics in Virginia.

The Bureau of Vital Statistics of Virginia has just completed a compilation of birth and death statistics from 1913 through 1926 which shows a number of interesting facts. The number of births increased steadily from 1923 to a high peak in 1921 with one drop in 1919, during the World War. Since 1921, there has been a steady decline, the birth rate in 1926 being 23 per 1,000 population as against a rate of 26.6 per 1,000 population in 1913.

There has been a slight decrease in the death rate—from 13.9 per 1,000 in 1913 to 12.2 per 1,000 population in 1926—with slight variations in between except in 1918 where there was a decided increase during the influenza epidemic.

Preliminary reports for 1927 show the lowest point in typhoid deaths yet attained and also a marked decline in diarrheal deaths of infants. There has, however, been a marked increase in number of deaths from automobile accidents. The largest number of deaths from these accidents occurred in September while February showed the smallest number of fatalities. The number of deaths from automobile accidents was more than two and a half times as great for white as for colored people.

Mt. Regis Sanatorium Making Improvements.

Mr. Regis Sanatorium, at Salem, Va., is doing quite a bit of building by adding to the main building which will give an increased space in the Culinary Department as well as by increasing the size of the Nurses' quarters. Several rooms are also being added to the Page Cottage. This is the private sanatorium

of Drs. Everett E. Watson and Dr. Churchill Robertson.

The American Doctor's Clinic and Golf Association

Has issued the itinerary for its 1928 European Tour, which combines the opportunity given by a European trip organized for clinical study and sight-seeing incident thereto with the pleasure of playing golf on some of the renowned links of the Old World. This group of doctors will sail from New York the first week in July and will return by way of Montreal, reaching that city on August the 23rd. Full information about this trip may be secured from Dr. J. L. Smith, secretary, 2312 North Sawyer Avenue, Chicago, Ill.

Mr. Straus Resigns as Director of State Laboratories.

Mr. Aubrey H. Straus, Director of Laboratories of the State Department of Health, has tendered his resignation to take effect June 15. In tendering his resignation, Mr. Straus states that the financial support of the laboratory has become so limited that it is impossible for him to develop it as he feels it should be developed. He states that the State laboratories are now doing more than seven times as much work as was being done in 1918, the year before he became connected with the laboratory, while the appropriation is only approximately three times as great.

In a recent notice regarding Mr. Straus' resignation in the daily press, Dr. E. G. Williams, State Health Commissioner, expressed regret that the State Department of Health was to lose the services of Mr. Straus and stated that he had rendered very efficient service. He announced that Dr. G. F. McGinnes had been appointed to succeed Mr. Straus. Dr. McGinnes is a graduate of the University of Virginia, has been full time health officer of Isle of Wight County and for the past two years has been taking a post-graduate course at the School of Preventive Medicine of Johns Hopkins University.

Dr. J. R. Guerrant,

Wirtz, Va., is spending several months visiting in Richmond, Va.

Healthy Children Have the Best Hearing.

In a recent text of the hearing of four groups of children by a physician of Boston, a group of boys in a school which maintained high physicial and nutritional standards proved to have the best hearing. The children in an institute for the blind made the next best average, and a group of children from the Boston public schools followed them closely. The poorest average was made by a group of crippled and deformed children in a State institution.

The Smoke Nuisance in Cities.

The U. S. Public Health Service has discovered that the smoke over Manhattan Island cuts out 42 per cent of the sunlight on winter mornings and 18 per cent at noon, the percentages being higher on foggy days. The heavy smoke over manufacturing centers causes not only a loss of efficiency from decreased lighting but screens out a goodly proportion of the health-giving ultra-violet rays.

New Hospital Organized in Hopewell.

A called meeting of all the physicians in Hopewell, Va., was held on the evening of February the 17th, 1928. At this time, those attending organized into a "Hospital Staff", adopted By-Laws and elected the following officers: Dr. J. C. Bodow chairman; Dr. W. W. Cleere vice-chairman; Dr. T. E. Armstrong secretary; and Drs. S. E. Gunn treasurer.

A motion was adopted requesting the Hopewell Chamber of Commerce to select six business men and three ladies who, together with three phyicians named by the Hospital Staff, would compose a board of twelve directors who were to apply to the State Corporation Commission for a charter. The Hospital Staff elected Drs. S. B. Perry, D. Lane Elder and Wright Clarkson. The Chamber of Commerce elected the following: Mrs. Fred Robins, Mrs. Philip Stull, Miss Lillian Burch, Mr. Roger Brooks, Mr. Roy S. Braden, Mr. P. M. Tallon and Mr. T. A. Burford. These, with the three physicians named, organized as the Board of Directors of the new hospital, which is to be called the Hopewell Hospital, and applied for a charter for same.

Officers of the Board of Directors are: Mr. Roger Brooks president; Mrs. Philip Stull vice-president; Miss Lillian Burch secretary, and Mr. T. A. Burford treasurer. Mr. P. M. Tallon was elected chairman of the Finance Committee, with authority to add such additional members to his committee as he might desire. Dr. Wright Clarkson, of Petersburg (one of the promoters of this organization) was elected chairman of the three physicians which will compose the Medical Committee of the Board of Directors.

The Board of Directors was authorized to

rent the present Hopewell Hospital, then operated by Drs. Lane and Jeff Elder, provided suitable terms could be arranged, and this building will be used as temporary quarters. It is contemplated to commence construction immediately upon a fifty-bed modern, fireproof hospital, which will be built so that additional units may be added when there is need of expansion.

At a meeting of the Hospital Staff on March the 26th, Dr. J. C. Bodow presiding, the following physicians were elected chairmen of the various departments: Medicine, Dr. J. N. Elder; Surgery, Dr. Herbert C. Jones; Eye, Ear, Nose and Throat, Dr. T. E. Armstrong; Pathology, Dr. J. M. Bailey; X-ray, Dr. Wright Clarkson; Chart Committee, Dr. J. M. Bailey.

At this meeting, Dr. G. P. McCoy, who has recently located in Hopewell, was elected to membership on the Hospital Staff, so that the full membership of the Staff is now: Drs. J. C. Bodow, W. W. Cleere, J. N. Elder, D. L. Elder, S. E. Gunn, S. B. Perry, J. M. Bailey, T. E. Armstrong and G. P. McCoy, of Hopewell, and Drs. Wright Clarkson and Herbert C. Jones, of Petersburg.

The Southern Society of Clinical Surgeons

Held its second annual meeting in St. Louis, Mo., early this month, under the presidency of Dr. Dan C. Elkin, of Atlanta, Ga. Dr. John S. Horsley, Jr., Richmond, Va., is secretary-treasurer. This Society has only twenty-six members, Dr. John S. Horsley and Dr. Carrington Williams, both of Richmond, being the only members from Virginia.

Hospital Association Meetings.

The thirteenth Annual Convention of the Catholic Hospital Association of the United States and Canada and the Second Annual Hospital Clinical Congress of North America will be held in the Cincinnati Music Hall, Cincinnati, Ohio, June 18th to 22nd, inclusive, 1928. The Fourth Annual Convention of the International Guild of Nurses will be held at the same time, in the same building, at night meetings.

This Convention and Congress will be one of the largest and most important hospital meetings of the year, and will comprise general scientific meetings, special clinics or demonstrations of hospital departments, and three hundred special commercial and educational exhibits. Outstanding authorities in medicine, surgery, pathology, nursing, dietetics and hospital administration, architecture and engineering will lecture and demonstrate in specially planned clinics representing the various departments of the modern hospital. A professional program of the highest interest and value is now being formulated, and all persons interested in medical and hospital service are cordially invited to attend.

Further information may be obtained from John R. Hughes, M. D., Dean of the College of Hospital Administration, Marquette University, Milwaukee, Wisconsin, who is General Chairman of the Convention and Congress.

Dr. R. L. Hudgins,

Farmville, Va., after a vacation of two months in Southern Florida, has returned home and resumed his practice.

Dr. Fred J. Wampler,

In charge of the Accomac-Northampton County Health Unit, recently at Accomac, Va., announces that he is now at Onancock, Va.

Fatal Accidents to Children.

According to estimates given out by the National Safety Council, over a fifth of the more than 90,000 fatal accidents in the United States in 1925 were to children under 14 years of age, and about a ninth were to children under 5. About two-fifths of the fatalities to the latter group were caused by burns; in the age group 5 to 9 years, automobile accidents and burns each caused about an eighth of the fatalities, while firearms caused nearly a sixth of the deaths among children from 10 to 14 years.

Since 1911, the United States and nearly all countries where conditions are comparable, have shown a decreased death rate from all accidents except through automobiles, which cause has kept the accident death rate up. The general rate for the United States in 1925 was nearly twice the rate for England and Wales.

New County Health Departments in Mississippi.

Mississippi has got at least one good thing out of last spring's flood. Each of the flooded counties of the State has organized a county health department, working full time, with the duty of inspecting dairies, controlling communicable diseases, supervising midwives, organizing infant-welfare, preschool and prenatal clinics, and the physical inspection of

school children, and of furthering general sanitation and an educational campaign for the promotion of public health. The U. S. Public Health Service, the Rockefeller Foundation, and the State co-operated to assist the counties.

Our New Volume.

In commencing upon our fifty-fifth annual volume with this issue, we wish to express our appreciation of the co-operation which has been given us by our readers, in the publication of the MONTHLY. It is your journal and we hope you may continue your interest, not alone by your splendid contributions to our reading pages but by patronizing our advertisers as far as possible. They help us to maintain the journal as it is and in turn deserve your patronage.

The American Association for the Study of Goiter,

Consisting of internists, pathologists, and radiologists, as well as surgeons, will hold their fifth annual Conference on Goiter, in Denver, Colorado, June 18th, 19th and 20th.

Several men from foreign countries have signified their intention of attending. Professor Breitner of the Von Eiselberg Clinic, Vienna, and Professor Albert Kocher of Berne, Switzerland, have accepted places upon the programme.

Addresses and discussions on prophylaxis, medical treatment, endemic goiter and cretinism from the public health standpoint are on the programme for the first afternoon. Pathology, various phases of surgical treatment, etc., will be considered the last two afternoons. The Denver Medical Society has made elaborate arrangements for diagnostic clinics and will also furnish good operative clinics.

All members of State Medical Societies are invited to attend.

Dr. Gordon S. Fahrni, of Winnipeg, Canada, is the President and Dr. Kerwin Kinard, of Kansas City, Mo., is Vice-President.

Attention, Please!

If a member of the Medical Society of Virginia, when you have finished reading the MONTHLY, perhaps your wife may be interested in knowing what wives of other members are doing in Virginia. We have a department —THE WOMAN'S AUXILIARY—given over entirely to the wives, mothers, sisters and daughters of members. This Auxiliary is growing in interest and numbers throughout the United States and in Virginia too. It is desired that the women members of all our doctors' families should be in this organization.

Doctor, won't you call your wife's attention to this page each month? Tell her that the officers of the AUXILIARY will gladly answer any inquiry she may wish to make with regard to the organization and that she is wanted as a member. Inquiries sent to the MONTHLY office will be passed on to the right officer.

Bibliographic Service of the National Committee for Mental Hygiene.

With the flood of psychological literature, sound and unsound, pouring from the presses today, it is becoming increasingly difficult to keep in touch with even the leading contributions through ordinary channels.

To help meet this situation, especially with reference to its mental-hygiene aspects, the Library of the National Health Council is issuing an annotated *Weekly Bibliography on Mental Hygiene and Related Subjects*, prepared by a librarian who specializes in this field and who has at her disposal unusual sources of information for her work.

Mental and nervous diseases, mental defect, endocrinology, normal and abnormal psychology, psychonanalysis, psychopathology of crime, delinquency and dependency, behavior disorders, child guidance, social psychiatry, intelligence testing, penology, educational and industrial psychology, vocational guidance, clinical psychiatry, social case work—the Weekly Bibliography covers the whole range of mental hygiene and allied subjects.

The bibliography is printed in two columns, alphabetically, with a descriptive note supplementing each item, and so arranged as to permit convenient clipping for card-index purposes.

Hospital for Crippled Children at University of Chicago.

The Home for Destitute Crippled Children of Chicago is to transfer its main hospital to the campus of the University of Chicago, where new buildings providing 100 beds will be erected. Part of the present plant of the home will be maintained as an emergency hospital and free dispensary for the west side. The hospital will remain under the jurisdiction of the institution, but the university will provide the medical care. This is the fifth hospital for children's work now connected with the university, and its addition means another step

toward establishing a clinic similar to those in Vienna and Berlin.

Heart Disease Among School Children.

Of 120,000 school children in Boston, 2,311 whose yearly physical examination by school physicians suggested possibility of heart disease, were examined by heart specialists. Of these 625, or one-half of 1 per cent, of the total number of school children were found to have organic disease of the heart; 77 were potential heart-disease cases; 265 were classified as doubtful and needing re-examination from time to time. These figures are not complete for all children of school age in Boston, since the survey included only those children well enough to attend school and the method of examination may have missed many potential cases.

International Oto-Rhino-Laryngological Congress.

Eye, ear, nose and throat doctors of the world will meet for the first time at the First International Congress of the Oto-Rhino-Laryngological Society, to be held in Copenhagen, Denmark, July 29 to August 1. According to announcement made by the American Committee of the Society, 25 Broadway. New York, the party will sail from New York, July 6, 1928.

More than seventy-five specialists will represent the United States at the Congress. These doctors will also spend some time visiting at various large cities in France, England, Germany, Norway and Sweden. Clinical discussions will be held in these countries with European doctors presiding.

The Congress will concern itself with questions relating to the treatment of the many maladies, injuries and infections of the eye, ear, nose and throat. It has been reported from abroad that very successful methods have been found for sinus trouble and middle ear deafness.

Dr. Chas. P. M. Sheffey,

Who graduated from Johns Hopkins Medical School in 1921, and after an internship for a year at Norfolk Protestant Hospital, entered the foreign mission field in the Belgian Congo, Africa, is at present engaged in general practice in his native city, Lynchburg, Va. Dr. Sheffey tells us that he was located about 1,000 miles in the interior of the Belgian Congo and engaged in medical work. Although many of the ailments of these people are similar to those met here, a large number of the natives suffering with tropical diseases come for treatment.

Dr. William A. White,

Of St. Elizabeth's Hospital, Washington, D. C., prominent psychiatrist, will be among the speakers at the Virginia Conference of Social Work at Lynchburg, the middle of April.

Dr. Richard H. Holt,

Of the University of Virginia, class of '25, is now located at Middleburg, Va., where he is associated in practice with Dr. H. A. Spitler. After graduation, Dr. Holt served an internship at Stuart Circle Hospital, Richmond, following which he practiced for a time at Marion, Maryland, before locating at Middleburg.

Juvenile Courts in Mexico.

A juvenile court has been functioning in Mexico City for about a year, and now the State of Puebla, by decree of the Governor, is about to establish one in its capital city—Puebla. The judge is to be assisted by a phyician and by two teachers who are normal-school graduates. The decree requires that similar courts shall be established throughout the State.

Early Diagnosis Campaign.

The Virginia Tuberculosis Association and its local branches are actively engaged in the "Early Diagnosis Campaign for Tuberculosis" and a large number of free examinations have been made at the various clinics held throughout the State. Feeling that there is a great need for just the kind of work that has been done, the Association will continue this campaign for sometime and announces that it will gladly send literature, professional or lay speakers, and motion pictures to be shown wherever requested. It is hoped that rural communities as well as the cities will avail themselves of this offer. Requests should be sent to the Virginia Tuberculosis Association, 511 Atlantic Life Building, Richmond, Va.

Dr. and Mrs. A. G. Brown, Jr.,

Richmond, after a visit of several weeks in Southern Europe, sailed for home on March the 28th and arrived in Richmond early this month.

Minneapolis Meeting.

Interest is beginning to center around the Minneapolis meeting of the American Medical Association. Although there will be ample hotel accommodations those who expect to at-

tend are urged to make hotel reservations well in advance in order that they may be conveniently located. Dates for the meeting are June the 11th-15th, inclusive.

Free Dental Treatment for Cuban Children.

Free dental treatment has recently been established by the Cuban Department of Public Health for public-school pupils of Habana and near-by towns, when their parents can not afford to pay for such service. To facilitate the service for suburban children conveyances have been provided to take them to the dental offices.

"El Nino," A Mexican Child-Welfare Periodical.

El Nino (The Child) is the title of a new monthly child-welfare periodical issued by the Federal District of Mexico at Mexico City. It covers the general field of child welfare. Its first number appeared in October, 1927. Its November number stated that the city department of health had ordered an investigation of the living conditions of the children of the working classes, especially in the suburban districts, and was making plans for improving the situation.

Dr. C. B. Bowyer,

Stonega, Va., returned the latter part of March from a vacation spent in Florida.

Gift to Medical College of Virginia Library.

A recent issue of *Skull and Bones*, the news weekly of the Medical College of Virginia, contained an interesting article on Dr. John Peter Mettauer by Miss Alice Randall, a senior in the school of medicine. As a prelude to a notice stating that a number of books owned by Dr. Mettauer had been presented to the Medical College of Virginia by Dr. Eggleston of Hampden-Sidney College, she gave a brief but interesting sketch of the life of Dr. John Peter Mettauer. As this history was so fully covered by Dr. W. L. Harris, of Norfolk, little more than a year ago, in his presidential address before the Medical Society of Virginia, which appeared later in the MONTHLY, we are not reproducing the article. It is a matter of great interest, however, to note that the young doctors are interested in these men who made medicine in Virginia as—

"Lives of great men oft remind us
We may make our lives sublime,
And departing, leave behind us,
Footprints on the sands of time."

The U. S. Civil Service Commission,

Washington, D. C., announces the following open competitive examinations, information about which may be obtained from the Commision:

Trained nurse and trained nurse (psychiatric) applications to be on file with the Commission not later than April 28;

Senior medical technician (anatomist), and physicist, associate physicist, assistant physicist, physical chemist, associate physical chemist and assistant physical chemist (all the latter in X-ray), applications to be on file with the Commission not later than May the 8th.

Jerusalem Safeguards Its Women and Children.

In November last Jerusalem passed an ordinance forbidding the employment of women and of children under 16 in all occupations in which white lead is used and in the manufacture of mirrors, asphalt, and bitumen. The ordinance also regulates their hours of work and periods of rest.

Budapest Congress.

The Fifth International Medical Congress of Industrial Accidents and Occupational Diseases is definitely announced to be held in Budapest, Hungary, September 2-8, 1928. National committees have been formed in the principal countries.

The Travel Study Club of American Physicians, of which Dr. Fred H. Albee, of New York City, is President and Dr. Richard Kovacs, also of New York, Secretary, has rearranged its summer trip for 1928 especially to focus upon the Budapest Congress. Those who have already indicated their intention of attending the Congress and others are invited to join the Travel Study Club either for the entire trip or at any point. The itinerary thus far arranged calls for sailing from New York on August 16th: three days in Berlin, three days in Vienna, five days in Budapest, two days in Bad Reichenhall and Salzburg, and three days in Munich; then via Milan to Nice for two days and from September 17th to 27th in Spain; sailing from Gibralter on September 28th and reaching New York on October 5th.

Correspondence regarding the trip should be had with Dr. Richard Kovacs, 223 E. 68th St., New York City.

Chiropractic is Doomed,

We take the liberty of copying an item from *The Journal of the American Medical*

Association of March 17, 1928, which is of special interest in view of the legislation which has been up for discussion recently in our General Assembly:

"In addressing a meeting of 500 chiropractors and sympathizers in Philadelpia, February 26, Mr. B. J. Palmer, 'the daddy of chiropractors,' made some illuminating remarks. According to the *Pittsburgh Medical Bulletin*, he said: 'Fully 80 per cent of the chiropractors in Pennsylvania are practicing medicine, not chiropractic. This is a sorry fact, gentlemen—we are practicing medicine. During the last year, I have been in every state in the Union, and this condition exists throughout. My ideals concerning chiropractic were shattered. Chiropractic is doomed. You have drifted so far from the basic principles of chiropractic that you have lost your identity and brought the basic science bill upon your heads. Twenty-eight chiropractic schools have closed recently, and many others will follow. The supreme courts in seven states have handed down legal injunctions during the last eighteen months, whereby these states are lost forever to chiropractic. I warned Ohio not to compromise. They tried to pass a bill engrossing medical principles and practices. I predicted its failure. It lost by 250,000 votes. There has been $250,000 of chiropractic money spent in California in the last year. You cannot defeat the end of science. The basic science bills are the buck shot which we deserve for trespassing. When chiropractors preach and practice and try to become physicians, then it is justifiable for the medical men to educate the chiropractor. Now beat that argument if you can. That is why we are losing right along. This will probably be the last time you will see me as a chiropractor, as I do not propose to lose my good money in fighting against sound arguments.' Incidentally, it is said that the number of students at Mr. Palmer's million dollar school at Davenport, Iowa, has decreased from 3,500 to about 300."

Dr. Claude Moore

Roanoke, Va., left about the middle of March for Rochester, Minn., where he has received a fellowship at the Mayo Clinic. He will be there for three years or more.

Elected to City School Board.

Drs. Ramon D. Garcin and Clifton M. Miller, both of this city, have been re-elected members of the Richmond City School Board for a term of three years.

Madrid's School Medical Work.

As a part of Madrid's medical work in the schools, some of them have been equipped to give sunbaths to children.

Dr. Teusler Visiting in Richmond.

Dr. Rudolph Teusler, of St. Luke's Hospital, Tokyo, Japan, is spending several months with his family in Richmond, Va. A new hospital building is now under construction to replace the old building which was destroyed by earthquake and fire several years ago. Under the direction of Dr. Teusler, this hospital has grown from a small institution in 1899 to one of the medical centers of the Far East.

With National Society for Prevention of Blindness.

Miss Mildred G. Smith, R. N., formerly Educational Agent of the Minnesota State Department of Health, has been appointed Staff Associate of the National Society for the Prevention of Blindness, with headquarters in New York City. Miss Smith will act as liaison officer between the Society and the various nursing organizations, public and private.

Miss Smith has had six years of public health experience. She was with the Red Cross in France during the War and has been on the staff of the Minnesota State Department of Health since 1925, first as Field Representative and recently as Educational Agent.

Dr. J. Fulmer Bright

Has just been re-elected mayor of Richmond, Virginia, for another term of four years.

Dr. W. M. Phipps,

Of the class of '15, Medical College of Virginia, recently of Gary, W. Va., has moved to Hopewell, Va., and is located in City Point Court Apartment.

For Sale—

The following equipment of the late Dr. E. H. Heaton: Large Fisher cabinet—latest type machine; Morse wave generator; deep therapy lamp; and galvanic battery outfit. All are in perfect condition, having been used only one year. Will sell for half price. Address Mrs. E. H. Heaton, Leesburg, Va. (*Adv.*)

Wanted—

By technician, extra laboratory work to do after 4 P. M. Thoroughly experienced in all routine examinations including Wassermanns. Willing to work on salary or commission basis. Address "No. 102," care VIRGINIA MEDICAL MONTHLY, 104½ West Grace Street, Richmond, Va. (*Adv.*)

Wanted—

Communication with physician in good standing to take charge of General Practice for three months, beginning May the 1st. Satisfactory salary. Single man preferred. Address "H," care VIRGINIA MEDICAL MONTHLY, 104½ West Grace Street, Richmond, Va. (*Adv.*)

Obituary

Dr. William D. Meeks,

Massies Mill, Va., who had practiced medicine in Nelson County for forty-three years, died at his home in that place, March 25th, death being due to heart disease. His wife and a son survive him. Dr. Meeks was sixty-seven years of age. After completeing his academic education, he studied medicine at the College of Physicians and Surgeons, Baltimore, from which he graduated in 1883. He has been a member of the Medical Society of Virginia since the following year. His funeral was conducted with Masonic rites.

Dr. Arthur Lewis Martin

Died at his ancestral home near Naulakla, Va., March 10, aged sixty-two years. He had been ill for several weeks. Dr. Martin was graduated in medicine from the College of Physicians and Surgeons, Baltimore, in 1891, and became a member of the Medical Society of Virginia in 1900. He was also a Mason and his funeral was conducted with Masonic rites. His widow and three daughters survive him.

Dr. Joseph Henry Parker,

Dendron, Va., died March the 29th, following a short illness. Dr. Parker was born in Surry County fifty-three years ago and, upon completing his academic education, entered the Medical College of Virginia from which he received his degree in 1904. He shortly thereafter became associated with Dr. W. L. Devany in the practice of medicine and joined the Medical Society of Virginia the same year. Dr. Parker was active in all the public interests of his town and county. He is survived by his widow and one son.

Dr. John S. Blair,

Churchville, Va., died March 31st at this home in that place, at the age of eighty years. Dr. Blair graduated in medicine from the Kentucky School of Medicine in 1875 and practiced his profession in Augusta County, Virginia, for more than fifty years. He is survived by five children, one of them being Dr. John R. Blair, of Richmond.

Dr. Thomas C. Miller,

For twenty-five years a practicing physician of Augusta County, Virginia, died at his home near New Hope, Va., the middle of March. He was fifty-five years of age and a graduate in medicine from the Maryland Medical College, Baltimore, in 1903. His wife and several children survive him.

Dr. Benjamin Chapman Goodwin,

Buckner, Va., died January 18, at the age of eighty-five years. Death was due to pneumonia following a cerebral hemorrhage. Dr. Goodwin was graduated from the Medical College of Virginia, Richmond, in 1865.

Resolutions on Death of Dr. Israel Brown.

The Norfolk County Medical Society, at a called meeting on February 11th, adopted the following resolutions on the death of Dr. Brown:

WHEREAS, It has pleased our Heavenly Father to call our dear friend and companion, Dr. Israel Brown, to his final reward, it seems fitting that we who knew and loved him should give expression in our sorrow to a few words of appreciation and affection.

Each member of this Society feels a personal grief in his loss. As presiding officer and active member of this Society, he has always shown unfailing courtesy and kindness, and untiring effort to aid the Society. He was lovable as a companion, always firm in his stand for right and honest dealing. He was a beloved physician, one who impressed those who knew him with his wisdom and loyalty to friends and his profession. In his death both the city and state has lost a good citizen, and the Medical profession a loyal physician of the highest type.

Your Committee submits these few words, asking that they be recorded in the minutes, and that a copy be sent to Dr. Brown's family and one published in the VIRGINIA MEDICAL MONTHLY.

WALLACE SPIGEL,
H. R. DREWRY,
E. C. S. TALIAFERRO.

Dr William Perrin Nicholson,

Former Virginian who had lived practically all of his professional life in Atlanta, Ga., died at his home in that place, April the 4th, after an illness of six years. He was born in Middlesex County, Va., seventy years ago, and graduated in medicine from the University of Virginia in 1876. He was prominent as educator and surgeon and was an ex-president of the Southern Medical Association and the Southern Surgical Association.

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VON RECKLINGHAUSEN'S NEUROFIBROMATOSIS WITH REPORT OF CASES.*

By WILLIAM H. GOODWIN, M. D., University, Va.

In 1882 Von Recklinghausen[1] called attention to the association of multiple neuromas and cutaneous fibromas and called them neurofibromas. Subsequently, believing that the origin of these tumors was from the perineurium and endoneurium, he chose to place these cutaneous tumors among the fibromata and restrict the term neuroma to tumors arising from the proliferation of nerve cells.

The term Von Recklinghausen's disease has come to signify a pathological state that is essentially congenital, often hereditary in several successive generations and characterized by tumors arising from nerve tissue, pigmentation, physical weakness, and mental failure. Other terms used to signify this disease are: elephantiasis mollis, pachydermatocele, plexiform neuroma, rankenneurom, dermatolyse and elephantiasis nervorum. The prevailing opinion is that neurofibroma is the best term to apply to these tumors.

The cause of this disease has never been accurately determined, but according to Verocay, quoted by Cushing[2], "the entire process in all probability depends upon an early embryonal disturbance of development of the specific elements of the nervous system which may have affected cells which are capable of producing ganglion, glia, and nerve fibre cells". To further quote Verocay, "the tissue of the multiple nerve tumors, which until a short time ago was regarded as connective tissue, is not connective tissue but a peculiar neurogenous tissue. The nerve fibre cells themselves, or corresponding embryonal cells, which possibly have not reached the normal structure of nerve tissue, constitute the basis of the tumor. The form of Von Recklinghausen's disease is most often seen in the multiple tumor with or without pigmentation. The term tends to limit the disease and not include the unusual and atypical cases not so common.

Weber[3] gives the following classification: 1. plexiform neuroma unaccompanied by multiple molluscous tumors of the skin, with or without cutaneous pigmentation; 2. multiple molluscous tumors of the skin without obvious neurofibromatosis of the nerve trunks, with or without cutaneous pigmentation; 3. pigmentation of the skin not (at least as yet) accompanied by obvious neurofibromatosis of the nerve trunks or molluscous tumors (cutaneous neurofibromata); and 4. anomalous cases of neurofibromatosis complicated by the co-existence of bony or epidermic (papillomatous) changes. Sensory, motor, psychic and nutritional disorders are often observed in the more advanced and complete cases of this disease. Disturbances of the endocrine system are so constant in well developed cases that an etiological relationship must be considered.

This is not a very common condition since, according to Preiser[4] and Davenport, it is found in only about one in two thousand cases that present themselves to medical clinics or private practitioners for skin diseases.

Wherever these tumors may be found their origin can be traced to nerve fibers. Even those that seem to arise from the sweat glands have their origin in sympathetic nerve fibers. Quite a number of cases show tumors arising from the walls of the gastro-intestinal tract.

Hartman[5] reports an interesting case of malignant degeneration of a nuerofibroma of the wall of the stomach.

Neuromas of the acoustic nerve are often associated with generalized neurofibromatosis and tumors of the other cranial nerves. Christin[6] and Naville collected twenty-three cases of central neurofibromatosis. Two had tumors of the optic nerve. One patient had thirty-one tumors inside the skull. The fifth case in this report seems to have had a neuroma of the acoustic nerve. This disease may not be apparent at birth but the dominant trait is present in the germ plasm and characteristic

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

manifestations may appear in childhood or not till late in life. In this report two sisters developed tumors about the onset of puberty. Injury seemed to have had a bearing on the development of the disease in case five. In case six café au lait pigmentation was present at birth and not till the child was twelve years of age, possibly approaching puberty, did tumor formation appear. Pregnancy seems to have some bearing on the progress of the disease.

In Meek's case, quoted by Preiser[4] and Davenport, the first nodule appeared on the right shoulder during the first pregnancy and steadily increased in size. During each succeeding pregnancy, but not in the interim, new growths appeared.

The characteristic tumors may appear anywhere on the surface of the body but are thickest on the trunk. They are rarely found on the palmar surface of the hands and feet, which throws doubt on injury being an exciting etiological factor. The number is very variable. Hashimato counted 4,503 on the skin of a Japanese man. The tumors are usually not symmetrical. They may surround a nerve, be on one side, invade the nerve or be pedicled. When sarcomatous change takes place, metastases are not usual and, if entirely removed, local recurrence is not likely. There was no recurrence locally in case five of this report. While the tumors usually vary in size from a few mm. to a few cm. there are cases showing large pendulous growths as illustrated in figures 5, 7 and 10.

Laughnane[7] reported the case of an Arab who was covered with fibroma molluscum of various sizes. One hung from the loin which weighed 70 lbs., and had replaced muscle tissue and dragged out the abdominal wall. The large tumor in case two of this report had replaced muscle and so dragged on the perineum that the uterus, adnexae and cecum were prolapsed through the ischio-rectal fossa into the middle of the tumor.

In case 4, figures 10 and 11, show a pendulous tumor attached to the subclavicular region. In case six, figure 12, can be seen the pendulous nature of the growth which would soon push the ear forward and hang in a fold over the breast.

In general neurofibromatosis it is not practical to excise all the tumors but of course isolated ones giving trouble or causing an unsightly appearance can be removed. The painful plexiform neuromata should be excised even though the nerve trunk has to be sacrificed.

In case of central neuromata complicating Von Recklinghausen's disease, the question of surgical treatment must be decided after a most careful consideration of all the phases of the disease in the particular case.

In case two, reported here, no attempt should have been made to remove the recurrent tumor of the buttock, and would not have been, had the operator anticipated the complication of herniated pelvic and abdominal organs.

Fig. 1. Case I.—The father, age 44, showing the stump of amputated arm and multiple tumors.

In case six the operative treatment was planned to be done in several stages after the technique of Sistrunk[8] who so successfully removed an unsightly cicatrix from the neck of a patient who had been burned by the Roentgen ray in the treatment of a goiter.

The following reports are of cases admitted to the University of Virginia Hospital. Some cases of very incomplete Von Recklinghausen's disease have not been included.

Case I.

History Nos. 5470 and 36932. Figures 1 and 2. J. A., negro; male; laborer; aged forty-four. Admitted November 12, 1911, complaining of tumors on the body.

Fig. 2. Case I.—A posterior view showing tumors, one fairly large between the scapulae.

The patient does not remember his parents or any other ancestors. He had one sister who died in 1901 but did not have tumors on the body. The past history is negative except for pneumonia and abscess of the neck. He has been married twenty years and is the father of five children. One daughter (the second case in this report) has many tumors on the body and one large one on the buttock. Another daughter (the third case in this report) has multiple tumors. The patient has three sons whom he says are free from tumors. (Subsequent information by personal inspection, however, has shown that the two youngest sons have multiple tumors).

There have been tumors on the patient's chest and abdomen ever since he can remember and have grown very little. At the age of ten years he noticed a small soft tumor on the right arm just above the elbow. This tumor continued to grow and at the age of twenty-seven years he had it removed and says it weighed twenty lbs. Four years later the arm became very much swollen and his physician opened it and removed a large quantity of blood. Five years later the arm suddenly swelled while piling logs and became very tense and painful. His physician then amputated the arm through the upper third. Healing was very slow.

Fig. 3. Case I.—The father, 10 years later, showing emaciation and senility. Tumor of stump has recurred and many more tumors have appeared.

The patient is well nourished and presents many spherical nodules over the surface of the body, varying from a few mms. to several cms. Some are deeply pigmented; some are pedicled, but most of them are sessile. They are soft and painless, and shotty and cord-like structures can be palpated in many of them. The muscles of the right shoulder are atrophied and the stump of the amputated arm is healthy. General physical examination is negative except for the above mentioned tumors and very bad teeth. The tumors are thick on the forehead and about the lower jaw, as well as on the back and anterior aspect of the chest wall. There are several small tumors on the thighs.

The patient came to the Hospital to visit his two daughters and consented to be admitted for study, refusing to permit the excision of a tumor for microscopic sections and was discharged the following day.

The photographs in figures 1 and 2 are not good, but a comparison with figures 3 and 4 will show what a marked change has taken place in this man during an interval of ten years.

Fig. 4. Case I.—Posterior view of the father 10 years after first admission.

The second admission was for a discharging sinus leading to an area of osteomyelitis in the upper third of the right humerus. The patient seems very much older and very weak. He can barely stand alone.

There is almost complete loss of memory and his mentality has become much impaired. Many more tumors have made their appearance and some have increased in size. Pigmentation is much more marked. Râles can be heard throughout both lungs and there is a systolic murmur. Wassermann is negative.

On account of the hopeless condition of this patient, he was made as comfortable as possible for one month and discharged unimproved. Subsequent information revealed that the patient became paralyzed and shortly afterward died.

Case II.

History Nos. 5395 and 64078. Figure 5. M. A., colored, female; domestic; aged eighteen. Admitted October 30, 1911, complaining of multiple tumors over the body and particularly a very large one on the right buttock.

Fig. 5. Case II.—A daughter showing large tumor of buttock which was removed.

Her father is the first case in this report and her sister is the third. There are three brothers and the two youngest have multiple superficial tumors. The past history is essentially negative. The menstrual history is normal and she has never been pregnant. She is well developed and well nourished, but mentally stupid.

About five years previous to admission, the patient noticed a small tumor on the right but-

tock. It was soft, round and painless. This tumor increased in size, extending from the crest of the ilium to the mid-thigh, giving much inconvenience. In the upright position the tumor hangs from the buttock along the posterior aspect of the thigh. Over the sacral region there is a wide area of dark pigmentation. The tumor is soft and the skin is thick and adherent, giving a pig-skin appearance. It measures 40 cm. in length and 80 cm. in its maximum circumference.

Under ether anesthesia the tumor was removed with great difficulty because of its size and particularly because of the many large blood vessels entering it. The skin was very thick in places. The walls of the vessels were so friable that hemostats fell off by their own weight, necessitating the use of many suture ligatures. The gluteal muscles seemed to have been replaced by neoplastic tissue. It was necessary to cut through tumor tissue thereby giving a poor prognosis. On gross examination the tumor was made up of strands and whorls of coarse fibrous tissue. In some places it looked myxomatous and areas of hemorrhagic degeneration were present. Many large blood spaces could be seen throughout the growth. The microscopic report was "neurofibroma".

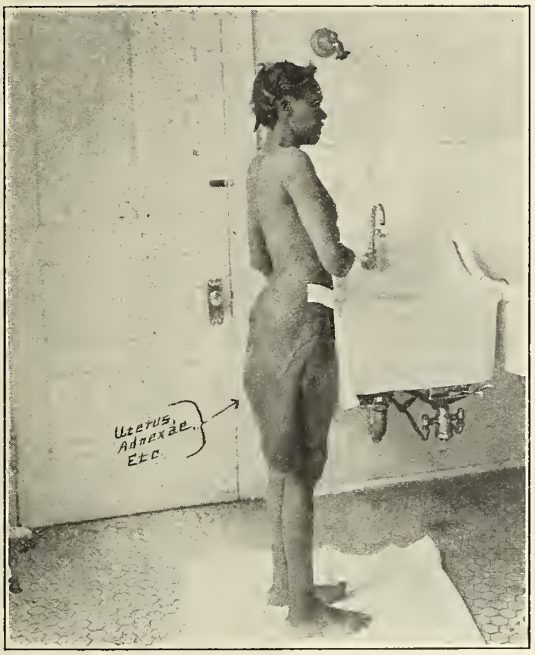

Fig. 6. Case II.—Same patient as Figure 5, but 16 years later, showing recurrence of tumor; many others have appeared. The patient has lost weight and facial expression has changed.

This patient returned on August 14, 1927, with recurrence of the tumor of the buttock and a much more generalized neurofibromatosis. (See figures 6, 7 and 8). She has held a position and successfully concealed the large, recurrent tumor from her employer.

The patient has lost much weight, and while stupid on previous admission, she seems feeble-minded now. The menstrual history has continued normally. There are many areas of pigmentation, particularly surrounding the attachment of the tumor of the buttock. Many of the smaller tumors are pigmented. Comparing the photograph on first admission (Figure 5) with those taken on this admission (Figures 6 and 7), one will be impressed with the loss in weight and change in facial expression which somewhat suggests acromegaly.

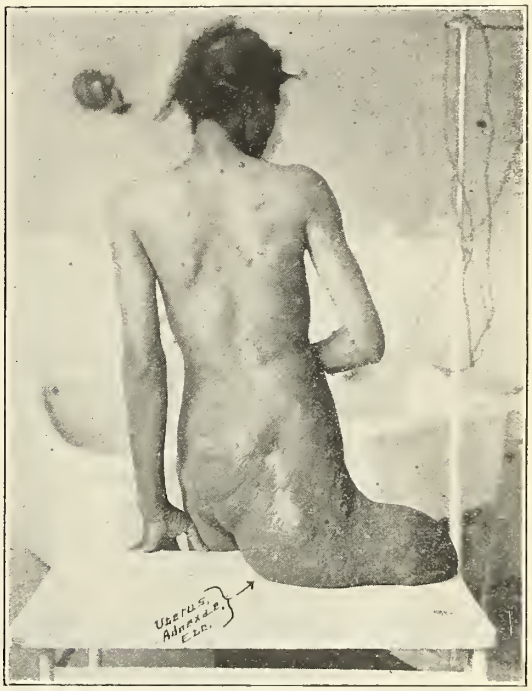

Fig. 7. Case II.—Same picture as Figure 6, showing many small tumors. Over the large recurrent tumor can be seen the cicatrix of former operation and dilated vessels.

The cicatrix from the former operation can be seen over the tumor which hangs from the right buttock to the popliteal space. The skin is rough and thick and the tumor is soft with nodules and cord-like structures palpable in many places. The skin over and around the tumor is darker than the normal skin and pig-

mentation extends down the thigh. About the middle of the tumor on a level with the mid-thigh, can be palpated a firm, globular, movable mass, about five inches in diameter. This seems to be an encapsulated portion of the tumor. Large vessels can be seen around the attachment of the neoplasm. The former operation was very difficult on account of the large blood spaces, but in as much as the patient is very much incapacitated by this growth it was thought wise to remove this tumor even though it should recur.

The patient was anesthetized with nitrous oxide and oxygen gas and, to facilitate handling the unwieldy tumor, it was suspended by ice tongs and an overhead Balkan frame and pulley. This proved to be a great help.

The tumor was outlined with appropriate incisions, encountering large blood vessels and thick skin as was described before. It was absolutely necessary to cut through tumor tissue. There was no muscle tissue under the tumor and one was unable to determine the origin of the neoplasm. The firm mass, about midway of the tumor and on a level with the mid-thigh, was exposed, thinking that it was an encapsulated portion. On opening this so-called capsule it was found that the peritoneal cavity had been entered and the mass proved to be the uterus and adnexae, bladder, cecum and appendix which had prolapsed from the pelvis through the ischio-rectal fossa. The uterus contained fibroid tumors which gave it

Fig. 8.—Neurofibroma and uterus with fibroids removed from Case 2. This is laying on a table which measures about a yard in length.

the above mentioned size and made it impossible to reduce this herniated organ. It was therefore necessary to do a hysterectomy in this most unusual location.

The patient showed shock and a glucose infusion with adrenalin was given. The operation was hastily completed and the patient returned to the ward where a transfusion was being given when she died.

Figure 8 is a photograph of the removed neurofibroma and the uterus with fibroid tumors.

Gross Appearance of the Specimen: The skin shows an old scar that runs the length of the specimen. Many large nodules can be felt under the thickened skin. The subcutaneous tissue is of a grayish color, apparently fibrous tissue. The tissue is edematous and stringy. A number of small cyst-like areas can be seen. Only a few nerve-like structures can be made out. Sections show nerve-sheath

Fig. 9. Case III.—Another daughter of Case I and sister of Case II, showing neurofibroma arising from supraorbital nerve.

cell type of fibroma with marked myxomatous appearance. There are a number of nerve fibers atypically arranged, also a number of blood vessels and areas of hemorrhage. The skin is thick and shows marked pigmented endothelial leucocytes diffusely scattered in the derma and subcutaneous tissue.

Case III.

History No. 5394. Figure 9. M. A., colored; female; domestic; aged 17. Admitted October 30, 1911, complaining of a tumor of the forehead.

Her father is the first case in this report

and her sister is the second. Two brothers have similar tumors. Past history is essentially negative. Menstrual history is normal.

Two years before admission the patient noticed a tumor on the right side of the forehead. The growth has slowly but steadily increased in size till now it is about five inches long and three inches wide. It is becoming pendulous but has not yet affected the eyelid. It is soft, movable, painless, and nodules and cord-like structures can be palpated in it. The skin over the tumor shows an herpetic eruption. This growth seems to arise from the supraorbital nerve. The patient is well developed and well nourished but stupid. There are other small, sessile, soft tumors scattered over the trunk and forehead. There are several nodules on the buccal mucosa and one on the tongue. A general physical examination shows no other abnormality. The tumor in the supraorbital region was excised and traced to its origin in the supraorbital nerve. Hemorrhage was free on account of the large blood spaces. There was no encapsulation and the tumor consisted of coarse strands of fibrous tissue traversed by large blood spaces and overlaid by thick skin. The pathologist's report was neurofibromyxoma.

Fig. 10. Case IV.—Showing neurofibromatosis and a pendulous tumor held by an assistant.

Fig. 11. Case IV.—Posterior view.

Case IV.

History No. 13407. Figures 10 and 11. E. G., colored; female; domestic; aged sixty. Admitted September 8, 1915, complaining of a painful tumor on the right shoulder and other tumors over the surface of the whole body.

The patient says her father and paternal grandmother had similar tumors.

The appearance of the patient is that of an old woman but she is quite active. There are bilateral pterygia. She has had tumors on the body ever since she can remember. Two months before admission a tumor over the

right deltoid muscle became very painful and she applied poultices. It broke down and bled freely and has never healed, giving off a foul bloody discharge. Over the entire surface of the body, but chiefly over the trunk are many tumors varying from a few mms. to several cms. in diameter. Some are sessile and others have well formed pedicles. They are adherent to the skin. Attached to the anterior aspect of the right shoulder is a fibroma molluscum which hangs about fourteen inches. The skin over and around this tumor is pigmented and nodules and cord-like structures can be palpated in this soft, flabby neoplasm. This growth and the ulcerated tumor over the deltoid region were removed and the latter reported by the pathologist as being a neurofibrosarcoma. The patient was discharged from the Hospital and subsequent inquiries concerning her have been unsuccessful.

Case V.

History Nos. 12246, 26753, 27187 and 31281. W. L., white; male; laborer; aged twenty-eight. Admitted March 30, 1915, complaining of a painful tumor of the left arm and others scattered over the body.

There is no family history of similar affection.

The past history is unimportant save for the presence of scattered superficial tumors which gave no trouble till eight years before admission when the patient was thrown from a horse, causing injury to his left arm necessitating the application of splints. Six weeks later the splints were removed and there was noticed a small hard tumor on the inner aspect of the arm two inches below the axillary fold. This tumor gradually grew till on admission it extended in a fusiform shape nearly to the inner condyle of the humerus. The mass was quite tender and pain radiated to the fingers. There is marked atrophy of the muscles of the left arm and shoulder. The patient is small but fairly well developed. The eyes show slight exophthalmos, vision is normal and pupils react normally. He is slightly deaf in the left ear. There is a small nodule, one-half cm. in diameter on the tongue. Both lobes of the thyroid are slightly enlarged. The muscles of the right leg are atrophied and flexion of the foot is limited. Both patellar reflexes are absent. There are about fifty tumors over the surface of the body varying from 1 cm. to 3 cm., exclusive of the one on the arm. Most of the tumors are in the skin, and are soft, painless, movable, and some are pigmented. Very tender, fusiform tumors seem to arise from the left ulnar and posterior tibial nerves. The tumor of the ulnar nerve was enucleated and the pathologist reported a neurofibrosarcoma. The patient was readmitted four years later showing no recurrence of the tumor previously removed. Muscular atrophy has increased. The tumor of the posterior tibial nerve has caused him much pain locally and radiates to the plantar surface of the foot. There is marked toe drop and plantar reflexes have disappeared. He has a steppage gait. Painful neurofibromata were easily removed from the left thigh and dorsum of the foot. Removal of the tumor from the posterior tibial nerve was difficult and the nerve had to be resected and anastomosis done. While in the Hospital, sixty days, the patient complained of severe headache and failing vision. He was allowed to return home but after an interval of eleven days he returned with mental depression and extreme weakness. He has a staggering gait, deviating to the left and has frequently fallen. His headaches are more severe and his audition and vision are much impaired. Blood and spinal fluid Wassermann are negative. Pressure of spinal fluid is 210 mm. There is bilateral choking of the discs and retinal hemorrhages and exophthalmos has increased. Tinnitus aurium has given the patient much annoyance.

A subtemporal decompression was done and the dura found very tense. When the dura was incised the brain bulged to such an extent that the pia mater split. The muscle could not be sutured till the lateral ventricle was aspirated.

The patient remained in the Hospital five months after the decompression. He suffered less from his headaches but there was no improvement in his vision and audition. He returned home where he remained for eight months and was then readmitted. He has frequently fallen in unconsciousness and the hernia cerebri is very large and tense. He is totally blind in the right eye and almost so in the left. Hearing is no worse. The patient was not treated on this admission.

Case VI.

History No. 63509. Figure 12. A. L., white;

female; school girl; aged thirteen. Admitted July 15, 1927, complaining of a "birth mark" on the face.

Family history is unimportant.

The child is underdeveloped, appearing not more than eight years of age. She is mentally alert. There is a deeply pigmented area extending from the occipital region to the left, pushing the ear forward and involving the cheek. It then extends down the neck and shoulder to below the acromial process. Posteriorly it is seen to extend to the spine of the scapula and anteriorly nearly to the nipple and across the mid-line.

The mother says the condition was present

Fig. 12. Case VI.—Elephantiasic neurofibroma of neck, face and shoulder, surrounded by cafe au lait pigmentation.

at birth but that one year ago the skin began to thicken and take on a darker color. At present the margins of the pigmented area are café au lait color. Where the skin is darker and thicker it is beginning to become pendulous. The skin shows irritation from scratching to relieve the annoying itching. This thick, elephantiasic skin is very movable on the underlying tissues and under this skin in the submaxillary and supraclavicular regions can be palpated hard, nodular masses, some of which are 2 cm. in diameter, suggesting enlarged lymph nodes. Coarse, cord-like structures can also be palpated. A few other small café au lait areas are found over the trunk and arms.

The patient is very sensitive over this disfigurement and anxious to have at least the pendulous part removed.

An elliptical incision was begun over the left mastoid process and carried to near the acromial process removing an area of skin eleven by five inches in dimensions. Underlying the skin was a plexus of nerve fibers coiled up in the tissues, many of which were 3 mm. in diameter and several neuromata were 1 and 2 cms. in diameter. These were removed as thoroughly as possible and the skin edges approximated and sutured.

The mother was instructed to massage the area after healing became secure and then a similar operation will be done, hoping that in stages the entire pendulous area can be removed.

Microscopic sections show marked increase in cellular fibrous tissue, both in the derma and the subcutaneous tissue with bands of hyalinization. There is infiltration with round cells and plasma cells. Papillary projections are broad, and lymph spaces are prominent. There is increase of pigment. Sections of the cord-like portions show neurofibroma consisting of sheath cells and fibrous tissue infiltrated with round and plasma cells. Nerve fibers are also found.

Diagnosis: Cutaneous neurofibromatosis with (non parasitic) elephantiasis.

References.

1. Von Recklinghausen, F. Ueber die multiplen fibrome der Haut und ihre Baziehung sur den multiplen neuromen. Berlin, 1882. A Hirschwald.
2. Cushing, Harvey. Tumors of the Nervus Acusticus. W. B. Saunders Company. 1917.
3. Weber, F. P. *Brit. Journal Dermat.* 21:49-53. 1909.
4. Preiser, Samuel A., and Davenport, Charles B. Multiple Neurofibromatosis (Von Recklinghausen's Disease), and Its Inheritance with Description of a Case. *American Journal of the Medical Sciences.* Oct., 1918. 156.
5. Hartman, Hans. Fibromyxoscarcoma of the Stomach in a Case of Neurofibromatosis. *Surg. Gyn. and Obst.* XLIV. 3. March, 1927.
6. Christin and Naville. A Case of Recklinghausen's Disease with Involvement of the Peripheral Nerves, Optic Nerve and Spinal Cord. *J. Nervous and Mental Diseases.* 56:441-452. November, 1922.
7. Laughnane, F. McG. A Case of Von Recklinghausen's Disease. *The Lancet.* 1:1301. June 18, 1921.

8. Sistrunk, Walter E. Contribution to Plastic Surgery. *Annals of Surgery.* Vol. LXXXV. February, 1927.

DISCUSSION.

DR. JOHN S. HORSLEY, JR., *Richmond:* Dr. Goodwin is to be congratulated on his very interesting presentation of the subject and the unusual case reports. It is a fairly common occurrence to see small isolated neurofibromata with the typical shrunken and soft characteristics. When you feel these lesions between two fingers the sensation is much like that obtained when one feels a California seedless raisin. These tumors have a very small pedicle and may often be quickly excised without any anesthetic whatever. Of course, the ones Dr. Goodwin showed were not in this class of easily excised lesions.

When I was in medical school in Boston I saw a number of cases of this disease associated with neuromas of the acoustic nerve, but in the last five years I have seen only two cases of severe neurofibromatosis. In neither of these latter cases was it felt that anything could be done to help them—except skinning and putting on a new skin. The lesions were entirely too numerous. These tumors, as Dr. Goodwin pointed out, may develop into sarcoma, but the sarcoma is of a fairly low grade of malignancy, and the prognosis is good on that account. The only treatment for these tumors is surgical excision; X-ray and radium are of no value. The indications for removal are painful tumors, deformity due to the size or the position of the tumor, and cosmetic reasons, particularly when the tumor is on the face. Occasionally plastic surgery is needed for the removal of these growths. Sometimes it is necessary to draw the skin in from the neighboring parts in order to get enough to cover the area left after excision. In 1918 Ludwig Keney, a German, reported successful results following hypodermic injections of fibrolysin. There seems to be very little in the literature, however, to confirm this.

I was certainly very much interested in Dr. Goodwin's report, and some of the cases he showed are among the most unusual I have seen in going through the literature.

BILE PERITONITIS.*

By FRANK HELVESTINE, JR., M. D., Roanoke, Va.

The oldest investigation of the reaction of the peritoneum to bile is probably that of Bohn,[2] published in 1755. Using dogs in his experiments and removing the gall-bladder with and without ligation of the cystic duct, he concluded from his results that gall-bladder injuries were usually fatal because bile escaped into the peritoneal cavity.

Ehrhardt[7] in 1902 investigated the resorption and toxicity of bile when introduced into the peritoneal cavity of dogs and cats. He cut through the choledochus of these animals to form a continuous secreting biliary fistula. The fact that perforation of the bile passages sooner or later leads to jaundice had already been noted and called by Kehr and Edler[13] "resorption jaundice." This appearance of icterus was considered a proof that bile was actually resorbed from the peritoneal cavity. Twenty-four hours following operation Ehrhardt noted jaundice in his animals which increased slowly not reaching a maximum until death which occurred in from two to six days. Convulsions preceded death in all cases and there was usually marked evidence of pain. Bacteriological examinations of the abdominal cavity of these experimental animals showed the contained bile to be sterile.

Working with rabbits, Noetzel[16] found that after an aseptic laparotomy if the gall-bladder be incised and left to drain into the free peritoneal cavity, after which the abdominal cavity be tightly closed, the animal regularly survived the experiment. Fraenkel and Krause[9] injected bile into the peritoneal cavity of experimental animals (guinea pigs and dogs) and found it well tolerated. Dogs in which they incised the gall-bladder to form an internal biliary fistula also recovered from the operation. Two to five weeks after operation these dogs were killed and at autopsy it was found that the wounds in the gall-bladder were healed or were sealed with omentum or loops of intestine. They concluded that bile introduced into the peritoneal cavity was innocuous.

Fulle,[10] using dogs and rabbits in his experiments, found that sudden flooding of the peritoneal cavity with bile, from a large incision in the gall-bladder or by the injection of bile taken directly from the gall-bladder of another animal, proved constantly fatal; while on the other hand, even larger amounts if oozing gradually from a smaller incision were borne much better, and bile pigments appeared in the urine. More recently, Wangensteen[20] found that in his experiments when a well functioning biliary fistula was established by operation, allowing bile to escape into the peritoneal cavity of dogs, death occurred in from twenty-four to forty-eight hours.

From the above experimental work it will be observed that there is a disagreement as to the significance of the introduction of sterile bile into the peritoneal cavity. Clinically there is the same disagreement.

Normal bile is sterile as shown by the work of Naunyn,[15] Dupre[6] and others. McWilliams[14] states that normal bile is tolerated fairly well and in large amounts for a long period of time by the peritoneum. Garre[11] reports a case which two months after injury was operated

*Read before the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

upon and a large amount of bile evacuated from the peritoneal cavity. The patient recovered. Hildebrandt[12] operated upon a case twenty-three days after injury and found a tear in the hepatic duct. Ricketts[18] reports twenty-eight cases of traumatic rupture of the biliary tract operated upon with a 22 per cent mortality. Courvoisier[4] collected thirty-four cases of rupture of the biliary tract caused by trauma, of which twelve recovered. In no case, however, did recovery follow without operative intervention. Amante[1] collected one hundred and one cases of traumatic rupture of the biliary passages and states that without intervention such an injury is usually fatal, due to the toxemia resulting from the absorbed bile.

On autopsy of the animals used in his experiments Ehrhardt noted a general diffuse icterus with bile in the peritoneal cavity. The serosa was glazed and shiny and there was no exudate or other inflammatory appearance. Bunting and Brown[3] have observed the pathological changes produced in rabbits after intraperitoneal injections of bile. At autopsy they found a bile stained peritoneal effusion and subcutaneous edema. There was necrosis of the fibers of the abdominal muscles. The heart was widely dilated and pale with hyaline degeneration and necrosis of the muscle fibers. There were areas of necrosis on the surface of the liver wherever bile touched it. There were areas of fat necrosis of the omentum and hemorrhagic necrosis of the pancreas. The kidneys showed signs of the toxic effects of the bile. They were markedly congested with scattered minute hemorrhages. The tubular epithelium showed degeneration and necrosis and within the lumina of the tubules there were casts and hemoglobin. Fulle states that the adrenals seem to suffer first and to a great extent from the toxic action of the gall-bladder bile.

Investigating the effects of bile when introduced into the peritoneal cavity, the following experiments* were carried out. Biliary fistulae were formed in two cats and a rabbit by opening the fundus of the gall-bladder in the cats and in the rabbit by removal of the gall-bladder without ligation of the cystic duct. All of these animals died within seven days after operation. A series of three rabbits were injected intra-peritoneally with sterile bile. These injections were uniformly fatal, causing death within five days. A series of twelve guinea pigs were also injected intraperitoneally with sterile bile and all but one pig died within twelve hours after injection.

Summarizing the results of the experiments reported above, it was found that bile introduced into the peritoneal cavity had a toxic effect upon the experimental animal and that in the majority of cases this toxicity proved fatal. The chief symptoms observed included lethargy, anorexia, diarrhea, and rapid respiration. The sclerotics were bile tinged at varying intervals before death. The parenchymatous viscera of the abdomen showed definite pathological changes. The liver showed areas of necrosis where its surface had been in contact with bile, and the cells of the central portion of the organ showed milder degenerative changes. The kidneys showed the picture of acute nephritis. Marked degenerative changes had taken place in the tubular epithelium, the glomeruli were swollen, casts were present in the tubules and the whole organ was congested. The cortical cells of the adrenal also showed various degrees of degeneration. The bile appeared to cause no inflammatory reaction of the peritoneum.

A second group of experiments were performed to determine if the toxic effect produced by the bile is in proportion to the amount of bile introduced into the peritoneal cavity. For these experiments three series of four guinea pigs each were used. In each series the pigs received an intra-peritoneal injection of 2 c.c., 4 c.c., 5 c.c., and 6 c.c. of bile, respectively. Two of the three pigs injected with 2 c.c. of bile died and the other survived. There was a variance in the toxic effect and the time of death caused by this small dose. The three animals injected with 4 c.c. of bile died in the average time of nine hours and fifty-seven minutes; the three animals injected with 5 c.c. of bile died in the average time of six hours and thirty-eight minutes, while the remaining three pigs which had been injected with 6 c.c. of bile died in the average time of six hours and forty minutes.

It would seem from the above that the toxic effect of bile is in proportion within certain limits to the amount introduced intra-peritoneally. However, after a certain amount has been introduced any additional amount does not seem to increase the toxicity. This is perhaps because the peritoneum can only absorb

*These experiments were carried out in the laboratory of the Pathological Department of the University of Virginia, 1922-1923.

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at a certain rate regardless of the amount of absorbable substance present.

In another group of experiments it was proposed to determine if there was any difference in the toxicity between gall-bladder bile and duct bile. Rous and McMasters[19] have shown that the ducts and gall-bladder exert opposite influences upon the bile. The ducts fail to concentrate and thicken it with mucus as the gall-bladder does, but dilute it slightly with a thin secretion of their own which is colorless and devoid of cholates. Three guinea pigs were each injected intra-peritoneally with 5 c.c. of bile obtained from the gall-bladder of a calf, and a second series of three guinea pigs were injected with the same amount of bile taken from the hepatic duct. The animals injected with duct bile died in the average time of six hours and fifty-five minutes, while in those injected with gall-bladder bile death occurred in the average time of six hours and ten minutes. This difference of forty-five minutes is too small to be held significant when the variable factors entering into such experiments are considered.

Lastly, it was attempted to determine the time required for the absorption of bile from the peritoneal cavity and its appearance in the urine. Three rabbits were operated upon and a small rubber tube sutured into the fundus of the urinary bladder. From five to seven days were allowed from the time of operation for the recovery of the animal and then bile was injected intra-peritoneally and specimens of urine collected at half hour intervals. All animals survived these injections and were re-injected after an interval of three days and specimens of urine were again obtained. These urinary specimens were tested for bile (Gmelin test) and it was found that the specimens obtained from three to three and a half hours after injection gave positive tests.

In all of the experiments the sterility of the bile used was tested bacteriologically.

Discussion

From the above experiments it is seen that sterile bile when introduced into the peritoneal cavity of the usual experimental animals has a definite toxic effect due rather to its absorption than any inflammatory effect that it may have on the peritoneum. There appears to be no difference in the toxicity of duct bile and the concentrated bile from the gall-bladder. In each experimental animal the peritoneum after being in contact with bile remained smooth and glistening, and there was no evidence of an exudate. The parenchymatous organs showed a very definite pathology but not of the degree described by Bunting and Brown. Fulle in his experiments noted especially the degenerative changes in the adrenals, and in my experiments these changes were also marked. Crile[5] has shown that the introduction of a toxic material into the body of a decapitated animal produced no effect on the adrenal. This observation would further substantiate the hypothesis that the toxic effect of bile is produced by its absorption from the peritoneal cavity.

The toxicity manifested is in direct proportion to the amount of bile introduced into the peritoneal cavity at one time until a certain limit is reached after which any additional amount does not increase this effect. A saturation point as it were is reached, probably due to the absorption rate of the peritoneum being a constant factor, so that only a given amount of absorbable material could be taken up in a given time.

Experiments showed that bile was absorbed from the peritoneal cavity and appeared in the urine in from three to three and a half hours. The urine contains bile many hours before there is notable jaundice, and also some time before enough bile could be absorbed to cause a slowing of the pulse as described by Finisterer.[8] Dr. Stephen H. Watts, of the University of Virginia, has observed several clinical cases of perforation of the gall-bladder in which bile appeared in the urine, and considers this a very suggestive sign in the diagnosis of rupture in a hitherto unjaundiced patient with gall-bladder disease.

The difference in the degree of the toxicity of bile in the free peritoneal cavity found clinically and experimentally is explained by Wangensteen as due to the great amount of taurocholic acid found in the bile of lower animals. Quincke and Hoppe-Seyler[17] have shown that among the common laboratory animals the rabbit and guinea pig respectively secrete nearly seven and eight times as much as the dog, and ten and twelve times as much bile as the cat. Man's rate of secretion places him nearer the last mentioned animals. This difference in the rate of bile secretion may also be a factor in the difference seen in the clinical and experimental results. Wangensteen, however, concludes from his review of the

literature that the escape of any considerable amount of bile into the abdominal cavity of man unless removed by operative intervention is always fatal.

SUMMARY

1. Sterile bile when introduced into the peritoneal cavity has a definite toxic effect on the organism. The principal pathological lesions are seen in the parenchymatous organs of the abdomen. No peritoneal reaction is produced and the toxicity of the bile is due to its absorption.

2. The toxic effects produced by sterile bile introduced into the peritoneal cavity are in proportion to the amount of bile within certain limits. After a certain amount has been introduced the maximum toxic effect is obtained and larger amounts do not alter the pathological picture. There is no difference in the toxicity of gall-bladder bile and duct bile. Bile is absorbed from the peritoneal cavity and appears in the urine in from three to three and a half hours.

REFERENCES.

1. Amante, 1912 (cited by Wangensteen).
2. Bohn, 1755 (cited by Rost; The Pathological Physiology of Surgical Diseases, 1923). Blakiston's Son & Co., Phila.
3. Bunting, C. H., and Brown, W. H., 1911, *Jour. Exp. Med.*, Vol. 14, p. 445.
4. Courvoisier, L. G. 1890 (cited by Wangensteen).
5. Crile, G. W., 1924, *Arch. Surgery*, Vol. 8, No. 2, p. 557.
6. Dupre (cited by Thebault, L. M. M., Contribution a l'etude des ruptures spontanees de voies biliaires dans le peritoine, Paris, Rennes, 1912, F. Simon, 162 p. 80).
7. Ehrhardt, 1902. *Arch. f. klin. Chir.*, Hft. 2.
8. Finisterer (cited by Neuber, E., *Deutsch. Med. Wchschr.*, 1921. Hft. 47 S. 1027).
9. Fraenkel, E., and Krause, P., 1899 (cited by Wangensteen).
10. Fulle, C. B. C., 1921. *Archivio Italiano di Churirgia*, Vol. 4, No. 3, p. 299.
11. Garre (cited by McWilliams).
12. Hildebrandt (cited by McWilliams).
13. Kehr and Edler (cited by von Arx; Correspondenz—*Blatt. f. Sweizer Aertze*, 1902, Hft. 32, No. 19, S. 585).
14. McWilliams, C. A., 1912. *Ann. Surg.*, Vol. 55, p. 235.
15. Naunyn (cited by von Arx).
16. Noetzel, 1909, *Verhandlungen der deutsch. Gesell. f. Chir.*, S. 701.
17. Quincke and Hoppe-Seyler (cited by Rous and Larimore: *Jour. Exp. Med.*, 1920, Vol. 32, p. 249).
18. Ricketts: 1905. *St. Louis Med. Review.* Vols. 51 and 52.
19. Rous and McMasters: 1921. *Jour. Exp. Med.*, Vol. 34, p. 47.
20. Wangensteen, O. H.: 1926. *Ann Surgery*, Vol. 84, No. 5, p. 691.

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THE IMPORTANCE OF DIFFERENTIATING ABDOMINAL SYMPTOMS IN SOME CASES OF ANGINA PECTORIS FROM UPPER ABDOMINAL SURGICAL LESIONS, ESPECIALLY CHOLECYSTITIS.*

By A. MURAT WILLIS, M. D., F. A. C. S., Richmond, Va.

An acute pancreatitis, high intestinal obstruction, the perforation of an ulcer or of the gall-bladder; such accidents create emergencies necessitating immediate surgical intervention in order to save the life of the patient. Unfortunately, even by the most careful study and the utilization of every diagnostic aid, it is sometimes impossible to determine which one of these conditions is actually present, and the surgeon may be chagrined on opening the abdomen with the expectation of encountering one, only to discover that another really exists. While such an experience may lessen the operator's self-esteem, it in no way exerts an unfavorable influence on the prognosis, because a laparotomy would have been necessary in any event. Far different, however, is the case when an operation of this nature is undertaken for the treatment of a supposed surgical lesion of the upper abdomen and the subsequent course of events discloses that the cause of the symptoms lays in a disturbance of the circulatory apparatus; here, not only does the operation fail to afford relief but it renders the chances of recovery distinctly less bright.

It is well known that disease of the heart or the intimately associated vessels may produce attacks of severe pain. According to Ranson (The Cardiac Nerves in Angina Pectoris; *Am. Heart Journal;* Vol. 1; p. 508; 1925-26) the pain fibers from the cardiac plexus pass through the stellate, the inferior, and the middle cervical ganglia to enter the white rami of the upper three thoracic spinal nerves; to a less extent, some may enter the vagal trunk. From functional studies, Singer (Experimentelle Studien ueber die Schmerzempfindlichkeit des Herzens und der grossen Gefaesse und ihre Beziehung zur Angina Pectoris. *Wien. Arch. f. inn. Med.*, Vol. 13; p. 157; 1926) concludes that no pain fibers are present in the vagus of the dog; pain sensation being mediated solely by fibers that pass through the stellate ganglion.

In common with other viscera, the pain-sensitivity of the heart is of a low order. While we possess the ability to determine with ac-

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1928.

curacy the site of a painful stimulus applied to the surface of the body, the pain of a visceral lesion is either imperfectly localized or else referred to some definite region of the body surface. Head and Rivers have formulated the general law that the phenomenon of referred pain in visceral disease is due to the fact that afferent fibers from the affected viscus enter the same segment of the spinal cord as do fibers from a related area of the body surface; and, since the latter is much more exposed to injury, we interpret impulses coming into this segment as arising from stimuli applied to the surface. In harmony with this law, we find that heart pain is generally referred to the area of distribution of the lower cervical or upper thoracic nerves to the surface.

The mechanism for the production of cardiac pain is unknown. From clinical observations it has been learned that severe attacks of pain may, apparently, arise in a heart or adjacent vessels where post-mortem examination fails to reveal adequate cause: conversely, gross disease of these structures may exist without giving rise to pain. Obviously, experimental study of this problem must be by some indirect method. Resorting to such a procedure, Singer has concluded that the myocardium is relatively insensitive but that both the aorta and the coronary vessels, with intact adventitia, readily transmit afferent impulses. In typical attacks of angina pectoris, the pain is generally of comparatively short duration and it is unusual for it have an abdominal distribution; however, exceptions to both these statements occur. Fussell states (*Monographic Medicine;* Vol. 5; p. 430): "Cases of angina pectoris occur which have as their cardinal symptoms pain in the epigastrium." Levy (*Nelson's Loose Leaf Medicine;* Vol. 5; p. 289) says of angina pectoris: "The features of the attack are, at times, entirely abdominal." It is quite possible, therefore, that an attack of angina pectoris in the limited sense of this term may be mistaken for a surgical lesion of the abdomen.

Cardiac pain arising from embolism of a branch of the coronary arteries with resulting infarction leads to the production of a symptom-complex closely resembling that occurring in cholelithiasis, cholecystitis, especially, rupture of the gall-bladder. These conditions may occur in previously healthy individuals, generally past the fourth decade, particularly in those who have lived too well. The attack of pain comes on suddenly; it is agonizing in nature; and it may be referred to the epigastrium. Physical examination indicates the intensity of the suffering; the patient may be grayish-white; his skin covered with sweat; there may be definite rigidity and tenderness of the abdominal muscles. Some fever is generally present, and the white count rises in some instances as high as 20,000. The low blood-pressure which is present in most cases of coronary infarction may be paralleled by that seen in the collapse after rupture of an abdominal viscus. It is obvious, therefore, that a mistaken diagnosis may easily be made here where the selection of appropriate treatment is of vital importance: the slim chances for recovery in the case of the cardiac patient would be immediately removed, were he subjected to operation while, in the case of a patient with a ruptured abdominal viscus such a course alone offers any hope.

Unfortunately, the presence of cholecystitis, cholelithiasis or other surgical conditions does not confer immunity against cardio-vascular disease: an individual may very readily have gall-stones and yet experience anginal pain from a diseased heart or vessels. It is difficult to state accurately what the incidence of gall-stones is in persons past forty years of age; certainly, it is very high. In many post-mortem examinations, biliary calculi are found and yet the history indicates that they produced no severe symptoms during life. Since angina pectoris and coronary infarction occur chiefly after middle age has been attained or passed, it is apparent that a considerable proportion of these cardiac patients may be carriers of symptomless gall-stones. It is true that by operative measures we may relieve the patient of the stones, but the strain of the anesthetic and the laparotomy may so accentuate the severity of the cardiac disturbance that death ensues from this cause. Both from unfortunate experiences in my own practice and from accounts of similar catastrophes that have occurred elsewhere (Forbes: Abdominal Pain of Cardio-vascular Origin; *Northwest Medicine;* Vol. 26; p. 60; Feb., 1927), I am convinced that cardiac death occurs in our middle-aged and elderly surgical patients much more frequently than is commonly believed. The danger points in these patients are, first, during the course of the operation; second, within the

next forty-eight hours, in the period of greatest discomfort; and, finally, after the lapse of days or weeks, when the patient is gotten out of bed or subjected to some other unusual strain.

The patient suffering from embolism of a branch of the coronary arteries may present a symptom-complex almost indistinguishable from that of a surgical emergency from an upper abdominal lesion. In both conditions, there may be agonizing epigastric or even lower abdominal pain; pallor; the feeble, rapid pulse; low blood-pressure; rigidity of the abdominal muscles; fever; and leucocytosis. Fortunately, however, in most instances, coronary infarction is generally preceded by more or less marked manifestations of cardio-vascular disease; and in the actual attack, the disturbance in the heart action and the reduction of blood-pressure are greater than is the case save in the severest collapse from a surgical lesion of the abdomen.

More frequent in its occurrence and more commonly the cause of diagnostic error is the existence of cardio-vascular disease in middle-aged or elderly individuals with symptoms explainable on the basis of some abdominal lesion. Both cardiac disease and gall-stones are encountered most frequently in the later decades of life; the type of patient in whom we expect the presence of biliary calculi; "fair, fat, forty, and full of flatus" is exactly the type suffering most frequently from cardiac pathology. Of recent years, the importance of early recognition of cholecystitis with the institution of surgical therapy before the calculous stage has been stressed, and by means of a carefully elicited history of digestive disturbances and the discovery of some deviation from the usual roentgenogram, gall-bladders have been removed, to be pronounced normal by the examining pathologist. We exhaust every effort of our ingenuity in the attempt to incriminate a gall-bladder; we overlook the possibility of these obscure symptoms arising from a diseased heart; we obtain suggestive evidence of gall-bladder pathology and hasten our patients to the operating table for a condition which practically never threatens life, only to see them succumb as the result of our diagnostic error.

In recent years we have come to rely more or less on the Graham Test for determining the presence of pathology in the gall-bladder. We even go so far as to believe that the failure of the gall-bladder to fill, or delay in the emptying time, indicates disease. My experience with this test in patients with cardiac disease is limited yet I have the impression that a considerable number of normal gall-bladders fail to function properly when the test is done in the presence of heart disease. It seems possible that the greater or lesser degree of hepatic congestion which accompanies myocardial weakness may interfere with the normal distribution of the salt. It is my belief that this point should be further investigated.

Nor does the existence of gross disease of the gall-bladder always justify immediate recourse to surgery. As already pointed out, an abdominal surgical lesion confers no immunity against cardio-vascular disease; the history of repeated attacks of epigastric pain may be attributable to the diseased gall-bladder, but in the type of patient already described, it behooves us carefully to investigate the condition of the circulation, in the attempt to rule out disease of the circulatory apparatus as the actual cause of the symptoms. We are too prone to accept one diagnosis as conclusive, particularly when it fits in with our pre-conceived ideas; but in order best to serve the interests of our patients, we should exert every possible care lest we precipitate death by the performance of an operation which is, at best in most instances, relief-giving and not life-saving.

Time does not permit my reporting in detail clinical cases covering this subject. I have in my files histories illustrative of these various clinical pictures. I have cases of angina where all of the distress was abdominal and where the X-ray after the Graham Test showed delayed emptying time or absence of salt in the gall-bladder. I have cases of angina and gall-stones in which symptoms sometimes were due to one and sometimes the other. I have cases of both angina and gall-stones in which all symptoms seemed to be anginal.

In conclusion, it may be said:

1. Typical attacks of angina pectoris, short in duration and with pain referred to chest and arm should be readily recognized.

2. Coronary infarction, causing agonizing epigastric pain, rigidity of the abdominal muscles, fever, and leucocytosis closely simulates an emergency arising from a surgical lesion of the abdomen.

3. Probably most frequent in occurrence is the anginal attack in obese, middle-aged patients, with or without gall-bladder pathology, where the pain is referred to the epigastrium and is accompanied by definite tenderness in the epigastrium and under the right costal arch and the history of digestive disturbance.

Johnston-Willis Hospital.

DISCUSSION OF PAPERS BY DRS. HELVESTINE AND WILLIS.

DR. J. MORRISON HUTCHESON, Richmond: I am afraid that I can not discuss the first paper very intelligently, but I trust that someone more familiar with the subject will do so.

I have been very much interested in the subject Dr. Willis has chosen and, as I have felt that it is of great importance to surgeons, it is gratifying to hear it presented from the surgical viewpoint. In conversations with patients about their complaints and about the things doctors have told them, I am convinced that there still exists in the minds of the laity and of a great many physicians a distinct bias in favor of what they call indigestion, either acute or chronic, as an explanation of symptoms, particularly those that occur below the diaphragm. I collected a few years ago a considerable group of patients for whom abdominal operation had been advised and, in a number of instances, done, for the relief of symptoms that turned out to be entirely cardiac in origin. From an analysis of the histories of those patients and the steps leading up to the mistaken diagnoses, I got the general impression that most of us fail to get and to keep in mind a clear conception of the possibilities of cardiac disease and that we tend to concentrate too quickly our attention upon the locality in which the symptoms appear.

We must remember that every individual of middle life or later is a potential cardiac case, that the onset of arteriosclerotic heart disease is peculiarly insidious, that its manifestations are often extremely atypical, that the physical signs which we associate with heart disease are apt to be very slight or entirely absent. We must remember that the vast majority of patients with angina complain of gas and belching that gives momentary relief and that this symptom is part of the angina, produced by the same mechanism by which the pain is produced, and must not be looked upon as evidence of disease of the digestive organs. We must recall, also, that tenderness over the liver margin is extremely common in cardiacs and that it is a symptom which is apt to be misinterpreted if the mind of the examiner is fixed on the gall bladder. We must keep in mind that fever and leucocytosis are the rule in acute coronary occlusion and that they must not be regarded as evidence of inflammatory disease below the diaphragm.

X-ray studies, while of great value, must be applied with conservatism when we undertake to differentiate between angina and gall-bladder disease as a cause of upper abdominal pain. In the series of cases to which I referred, X-ray examinations of the gastro-intestinal tract and the Graham test on the gall-bladder had been done a number of times. In five of those cases it appeared that the X-ray findings, or rather the faith that was put in the X-ray findings alone, were the principal cause of error. As an example, an individual has a pain which is for the most part below the diaphragm. He is apt to state that he has pain in his stomach or that he has indigestion, acute or chronic. Without a very careful or painstaking history he is referred to the X-ray man for diagnosis; the X-ray man finds a sign that suggests gall-bladder disease, and that ends the matter. I agree with Dr. Willis that the subject of the Graham test in patients with probable passive congestion in the liver needs further study. Even though gall stones be present, heart disease may also be present and constitute a much more serious situation.

DR. W. H. GOODWIN, University, (being asked by the President to discuss the papers):—Mr. President and fellows of the Society, I am sorry I got in a little late to hear Dr. Helvestine's paper. I know it was very interesting, but he was just about to close when I came in. I have had no experience with peritonitis caused by bile, but I feel there is a great need for drainage when we have operated on the biliary tract. Some people seem to feel safe in tying off the cystic duct and not draining, but the pressure in the biliary tract is increased after the gall-bladder is removed and I always feel safer in putting in a small drain to the cystic duct. I recently saw an article by someone whose name I do not recall, in which it was stated that it is extremely dangerous to leave a detached piece of liver in the biliary tract. Had I known that I should be called upon for this discussion, I would have made a note of the name of the author.

I was extremely interested in Dr. Willis's paper and agree with everything he says, particularly that we should be very careful in selecting the cases upon which we operate and particularly those of middle age and beyond. I suspect it might be better to operate on those cases and find they are cardiac cases rather than not to operate on an acute appendix, perforated peptic ulcer or acute gall-bladder.

DR. MURAT WILLIS, closing the discussion: In my clinical experience I have not had as much difficulty in differentiating acute upper abdominal conditions from angina pectoris with abdominal symptoms as I have the mild recurring attacks of angina from chronic cholecystitis. In spite of the fact that this condition is constantly borne in mind in certain types of cases, we have seen the mistake made. The most important thing for us to remember is that the patient can be the victim of two conditions and, because one has a definite gall-bladder disease, does not exclude the more important disease of the heart.

CARCINOMA IN LYMPH GLANDS OF THE GROIN WITH NO EVIDENCE OF PRIMARY TUMOR.*

By R. D. GLASSER, M. D., Norfolk, Va.

The literature is meager on this subject. So far as I can ascertain there has been no primary carcinoma of the inguinal glands reported, nor have I been able to find in the literature reports of any case similar to this one, so I have made reference to recognized authorities, whose opinions I shall quote briefly.

Dr. J. Shelton Horsley, of Richmond, Va., in *Annals of Surgery*, 1925, reports unusual new growths in the region of the inguinal

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

canal. He states that in one of his cases the gross appearance as well as the histologic structure suggested the possibility of a cystic adenomatous tumor, which he thought might have been derived from the remnants of the meso-nephric duct, but further examination showed the growth to be an unusual change in the histology of a lipoma. He also states that lipomas in the inguinal canal and along the spermatic cord are very common. In a letter recently received from Dr. Horsley, in response to a request for information regarding primary carcinoma of the inguinal glands, he writes me as follows: "I hardly know where you can find any literature on primary cancer of the inguinal gland. Of course, as you know, this would have to come from some dermoid, as there is no epithelial tissue normally in the inguinal canal."

Dr. J. H. Weeks, of the Surgical Clinic and Research Institute of the Lankenau Hospital, Philadelphia, reports a case of Sarcoma of the Rectum, in *Surgery, Gynecology and Obstetrics*, April, 1927. He states that the inguinal glands are never enlarged in sarcoma, but they may be in carcinoma of the rectum.

In a personal communication from Dr. A. C. Broders, of Mayo Clinic, is the following: "I have never heard of a case of primary carcinoma of the inguinal glands. It is possible that you are dealing with a primary endothelioma and even this neoplasm is extremely rare in the inguinal lymph nodes. You had better examine your patient closely in order to rule out a small melanoepithelioma of the thigh, leg or sole of foot, also cancer of prostate, or bladder."

In response to a similar request, Dr. S. W. Budd, of McGuire Clinic, Richmond, Va., says that the only two types of malignancy that originate in a lymph node are an endothelioma or a sarcoma. A carcinoma must be brought from some other part of the body. In his opinion, there is no such condition, as primary carcinoma of lymph nodes.

In a communication July 6, 1927, Dr. Francis Carter Wood, of the Institute of Cancer Research, Columbia University, states the following: "I know of no records of a primary carcinoma of the inguinal nodes"; and in a personal letter July 30th: after examining the section, he writes as follows: "It is probably not from the intestinal mucous membrane and also probably not from the testicle. It could be from a mole. Perhaps the little scar which you found on his leg may have been some mole which was cut off, concerning which the patient did not tell you. I have seen a number of cases of that sort, very small non-pigmented moles on the sole of the foot, or between the toes, or on the calf of the leg give rise to metastases in the inguinal nodes. The cells of this tumor could perfectly well be of this type. On the other hand, it is possible that it is a primary tumor of the nodes themselves, a growth which has been termed 'primary endothelioma of the nodes.' It is very rare; the only case I have seen has been from the cervical nodes, and there is always a doubt about the diagnosis until an autopsy on the patient has shown that there is no source of tumor elsewhere."

A section was sent to the Chicago Laboratory, pathological department, and report from Dr. Arkin is as follows: "Sections from the tumor of the right groin show a lymph node with extensive carcinoma metastases. Only a small portion of lymph gland tissue remains. The greater part of the mass consists of solid masses of cells, round, oval and polyhedral, supported on very thin connective tissue septa. The cells in some areas are arranged in long cords, two or three cells in width, in other areas they are large solid masses with extensive necrosis. The structure of the tumor metastases is strongly suggestive of certain malignant tumors of the testis, such as the malignant embryoma. Abnormal mitotic figures are frequent in the tumor cells. It is interesting that these malignant tumors of the testis bear a close similarity histologically to the malignant hypernephroma of the kidney and adrenal, all being derived from the pro-, meso-, and metanephros. Metastatic carcinoma of inguinal gland, the primary site probably in the testis."

From these opinions I can draw the conclusion that the tissue is certainly carcinoma but its direct source not known, or rather doubtful.

I am probably too hasty in reporting this case, as sufficient time has not elapsed since this patient came under my observation. The positive pathological tissue and the prominent clinical negative findings, however, justify recording this case as being of some importance. His steady improvement is good evidence of the successful removal of the offending agent, and the persistent negative findings warrant the opinion that the gland removed last Febru-

ary is the primary seat of the disease and the gland subsequently removed is secondary. Up to the present time, we could not locate any evidence of malignancy or any other lesion in this patient. In this search, I have been assisted by local as well as out of town consultants.

Report of Case

J. H., white, male, age 32, married, one child, occupation bookkeeper. First consulted me January 26, 1927, for a lump he had noticed in his right groin about six weeks previously. Since that time it had increased in size but very little, and he could not account for this because he thought his general health was excellent. At no time did he complain of pain. His family history is unimportant except that his mother died, June, 1926, from atypical leukemia. His past history is also of very little importance. As a child he was always healthy and escaped the more serious childhood diseases. Tonsillectomy when a child, mumps at the age of fourteen, and at seventeen supposed to have had congestion of the liver and kidneys. A mild Neisserian infection about four years ago without complications. His best weight, 158 lbs., and at present 154 lbs. He had an ulcer on the middle third outer side of left leg, about seven years ago, which was troublesome for nearly a year, but finally healed by local treatment. At this time he also suffered with pains in his right shoulder joint, thought to be neuritis. He gives no history of injury, difficult or painful defecation, or rectal bleeding. Urinary symptoms entirely absent. Last August, following his mother's death, he called at my office for an health examination. This included a complete blood which proved to be entirely normal.

Physical examination showed a moderately well nourished adult, no evidence of jaundice, some pallor, and slight cyanosis of lips. Cheerful and appears to be in no discomfort or pain. Heart and lungs normal. The abdomen is soft, no tenderness or masses palpable. Gall-bladder and kidney regions negative on palpation. The spleen not felt. Liver dullness normal. A hard round mass about the size of a large English walnut, felt in the right groin, freely movable under the skin, and only tender on deep pressure. There is no evidence of any genital lesions. Rectal examination by speculum is negative and on palpation the prostate gland is practically normal. There are no other palpable enlarged glands in the other groin, axillae, neck or epitrochlear regions. His extremities are negative, except for a healed scar on his left leg and a small indurated spindle-shaped mass just palpable on upper anterior thigh, just below Poupart's line.

Laboratory Findings: Urinalysis, including Bence-Jones bodies, entirely normal. Blood Wassermann, blood sugar, and calcium normal; leucocytes, hemoglobin and red cells are entirely normal. X-ray examination shows lungs clear. No evidence of tuberculosis or malignant disease. The heart is also negative. Stomach and "Cap" and terminal ileum are negative. The cecum and ascending colon lie comparatively low in the pelvis, while the hepatic flexure is considerably deformed, the picture presented being consistent with a ptosis of the entire ascending colon and the resulting deformity of the proximal portion of the transverse colon, with adhesions about the appendicular region. No malignancy was noted, however. The appendix does not fill. While no special study was made of the liver, it is apparently normal in size. No special examination was made of the gall-bladder. Cystoscopic examination reveals a negative urethra and bladder.

He was admitted to St. Vincent's Hospital, February 18, 1927, and the gland removed under local anesthesia. It was enucleated intact. This gland was not attached to any structure of the inguinal canal. It was purely in the fatty tissue and superficial, almost directly subcutaneous. No adjacent glands felt. The wound healed primarily.

Pathological Report by Dr. M. E. Roche, St. Vincent's Hospital, February 18, 1927, follows: "Tissue consists of inguinal gland. 7x3x2 cms. encapsulated. On section cut surface, greyish translucent. Areas of necrosis here and there. Frozen section shows diffuse mass of large oval, round and polyhedral cells on single strands of stroma, many dividing cells. Type of cell suggests embryonal sarcoma of testicle. Diagnosis: Carcinoma."

Upon this information 1900 mgm. hours radium was given by Dr. E. C. S. Taliaferro, a few days later. A blood count the next day showed the red and white cells normal.

A section of this specimen was sent to Dr. Bloodgood for an opinion and the following report was received on March 11th: "Lymph

Glands — Groin — Metastatic Carcinoma. Question as to Primary Tumor." In his comment on this section, he stated that it looked more like malignant tumor of testicle, and that no lymph gland tisssue remained. The cells are morphologically more of the sarcoma type than carcinoma. If carcinoma, it is transitional of the type that could come from the urinary bladder, but not from the skin. Does not suggest a primary rectal carcinoma. Cells are not unlike the testicle, but the testicle does not always metastasize to glands of the groin.

Patient was referred to Dr. Joseph C. Bloodgood who, on March 24th, 1927, made the following report: "There is a scar in the right groin from which a gland was removed about six weeks ago in February, 1927. I have seen the section of the tissue. He had noticed the gland about two months. Patient is a white male age thirty-two. Has never noticed anything else. Both testicles are in place and normal. Has no trouble in passing water. No pain anywhere. The only thing he noticed was the gland. Feeling the abdomen—no other glands to be palpated in groin, axillae or neck. Says there is some tenderness when I handle the abdomen. I have a full note from Dr. Glasser. The blood is negative. No anemia. Urine negative. Wassermann negative. Teeth and tonsils are negative. Feeling the Groin Again and I do feel another gland beneath the scar. Patient states that he has been receiving radium treatment over the scar." In a notation attached to the report he summarized his findings: "The only thing we find is he still has glands in the right groin, and when I palpate the abdomen I get a little tenderness and here and there is a suspicious soft mass but not enough to be definite. There is a scar on his left leg from a lesion that got well without operation but by treatment, and it is hard to imagine that a malignant disease could be cured by treatment. I have never seen a primary tumor of glands of this kind. We can be quite certain that we are doing no harm by not removing the glands completely now. I would advise deep X-ray treatment over the right groin. It is a very interesting case."

In a letter received from Dr. Bloodgood dated April 15th, after viewing the X-rays in this case, made by Dr. J. W. Hunter, he writes as follows: "As I look back over the history, I find that tissue was sent me and that sections undoubtedly showed metastatic carcinoma. Examination at my office, March 24, 1927, revealed a scar where glands had been removed in February, 1927. Glands had been present two months. Has been receiving radium treatment. I could find no evidence of any primary tumor anywhere. Proctoscopic examination was negative. Only suggestive thing was a healed ulcer, middle third, outer side of leg which he had in 1920, seven years ago. It healed spontaneously. I am looking at the X-rays—stomach, colon, pelvis, hips, and lungs. I see no bone lesion. No mediastinal tumor when as a rule in lympho-sarcoma or Hodgkin's disease we have such a tumor. There is no lifting of the diaphragm suggesting a tumor of the kidney. Stomach and colon are apparently normal. There is some ptosis of the hepatic colon which could be due to a kidney tumor; but I could not feel any and there is no shadow suggesting one. We can say these prints are negative."

In April he received several 200,000 volts deep X-ray radiations. His color, strength and weight showed improvement. The fibrous mass just below operative scar was no longer felt. Early in May his general condition very well.

June 4, 1927, X-ray of pelvis and chest for probable metastases was negative. Complete blood and urine also negative. On July 5th, the enlarged area just below the operative scar which had apparently disappeared in May was again palpable, and slightly uncomfortable but not enough to prevent his daily duties. August 1st, had gained 2 lbs. and the mass took the shape of a gland. August 22nd weight about the same. No complaints, except the gland was slightly larger. September 8th re-admitted to St. Vincent's Hospital and, under gas oxygen anesthesia, a wide dissection was done. The gland about 2x1 cms. in size was found in the subcutaneous fat lying directly on the fascia. It was removed intact, with much of the adjacent fat. Careful palpation did not reveal any evidence of other glands in the immediate region. He was discharged from the hospital on the fourth day and the sutures removed on the seventh. Received deep X-ray therapy on the eighth-day. The wound healed primarily and he returned to work on the tenth day feeling unusually well. The gland was sent to Dr. Bloodgood for an opinion, and the fat examined by a local pathologist. Report

and comment from Dr. Bloodgood September 9, 1927: "The section from the gland you removed shows carcinoma of the cuboidal or transitional cell type. Sometimes it is difficult to tell this type of carcinoma from primary endothelioma or sarcoma. It is the same type as the section you sent me. Yet we could find nothing but the tumor in the groin. My old notes say no evidence of tumor elsewhere."

Report from Dr. James A. Wilkins, Norfolk, Va.: "Microscopic examination shows fat tissue is infiltrated by small irregularly rounded cells whose nuclei are rich in cromatin. Diagnosis: Metastatic carcinoma." This man was examined just a few days ago with no apparent evidence of disease or malignancy. He is improving generally and is still receiving X-ray therapy.

718 *Medical Arts Building.*

DISCUSSION.

DR. E. C. S. TALIAFERRO, Norfolk: I have seen this case with Dr. Glasser several times. Dr. Glasser has thoroughly worked this man up, from the physical examination, has X-rayed him, gone over him as thoroughly as possible, cystoscoped his bladder, etc., without any evidence of a primary growth. Of course, we all know that a primary carcinoma of the inguinal region is not rare but is impossible. I am thoroughly of the opinion that this man has a third testicle, undescended, in the abdominal cavity. As I said, Dr. Glasser has thoroughly studied this man and has been unable to find any just cause or reason for it. But there must be some cause. So far as the lesion on his leg is concerned, that occurred four or five years ago. He has a scar, but it is healed, and it is pretty far fetched that it could be the cause. I think it is secondary to an undescended abdominal testicle.

Dr. Roche, in her report, said type of cell suggests embryonal sarcoma of testicle, so one would naturally think this was a metastatic condition from the undescended testicle.

MENTAL DISEASES: VIEWED AND TREATED FROM VARIOUS ANGLES—SOME HEREDITARY FORMS REQUIRING RADICAL TREATMENT.*

By BITTLE C. KEISTER, M. D., Harrisonburg, Va.

During the past decade we find, after careful study, that the *mental side of medicine* is rapidly becoming more prominent, requiring more attention from a scientific viewpoint than ever before in the history of medicine.

Since the great World War, our country is fast becoming the dumping ground of every known or imaginable theory and cult, many of which date back to the "Dark Ages", when sorcery, witch-craft and fortune-telling were in common vogue.

Then we have the more modern so-called theories, such as Christian Science, agnosticism, modernism *versus* fundamentalism, new theory of evolution, theosophy, spiritualism, etc.

Not a day passes that we do not read of some new and untried theory and treatment for the supposed relief and cure of our many human and *physical* infirmities. And, strange to admit, some of our modern text-books on medicine, our *standard medical journals* and encyclopedias, are brimming full of these so-called theories and psuedo-sciences, such as *Abram sinuo-therapy*, physio-therapy, radio-therapy, diathermy, actino-therapy, helio-therapy, surgical diathermy, electro-coagulation, etc.

Each one of these pseudo-theories is strongly advocated and taught by certain pseudo-scientific schools, both in this country and Europe, for the relief and cure of man's physical ailments, regardless of his *mental vagaries*, which, in many instances, require the most active and skillful treatment from a skilled physician.

Strange as it may seem, we rarely see or read of any authentic treatment or treatise pertaining to the many diseases and abnormalities of the mind. We read our medical journals, some of which give fine articles pertaining to psychology and nervous diseases, mental hygiene, etc., but we get very little information outside of our actual experience.

A very eminent pathologist has recently discovered that "*bad temper*" alone has the effect of increasing the amount of sugar in the blood from 10 to 30 per cent in the course of a few minutes, causing an angry person to fight the object of his rage. He becomes hot-blooded from the intoxication of the carboraceous material in the brain and muscular system, due in part to a derangement of a certain tiny gland, about the size of a pin. When this little gland functions normally, the person remains calm and even-tempered, but if it exudes its essence (colloid) too lavishly, hatred, passion and quarrels ensue.

Dr. Wm. Star Myres, Princeton, University, deliberately states that:

"Out of our 105 million people of the United States, 45 million have only the mental capacity of a thirteen year old youth, while fifteen million possess only the mental force of an eight year old child, and of the remaining 45

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

million, statistics show that 25 million are classed with the mediocre, while 5 million are classed as 'A' in mentality, and the remaining 15 million are classed as 'B' in mentality; the two latter classes do the entire mental work of our country. According to statistics, we have in the United States 60 million morons."

In view of these humiliating facts, should we not, as a profession, begin to take cognizance of the fact that we are not placing enough stress on mental diseases and their prevention? When we realize the close relation of the mental to the physical, and the adaptability of the nervous system, its possibilities in degree of organization, and appreciate that the nervous tissue is the most delicate in the body, and possesses so little reparative power, we may wonder that it can at all be in a healthy state.

When we consider that it is upon the perfect integrity of the fine adjustments of this slender and intricate organization that the healthy functional action of every other tissue of the body, even to that of the most insignficant secreting gland, depends, we are enabled to estimate the extent to which our physical as well as our mental well-being is under its control. To increase this marvelous significance, we have only to learn that Nature has seen fit to make what has been termed the "master tissues" of the body, the brain and spinal cord, dependent for their own vitality upon the blood supply which comes to them through arteries which, for the most part, are what are called end-arteries. Such arteries have no communication with one another, a plan which means almost inevitable death to these parts when the arteries break down or become occluded. (Courtney).

By careful study we have learned in this cursory way something of the wonderful mechanism of the human brain, its adaptations as well as the risk from its impaired usefulness. Let us, then, study more vigorously how its hygienic conditions may be preserved and its greater efficiency secured.

In this brief review on this important subject, we may consider three chief factors,—heredity, environment and education. In late years not so much influence has been attributed to the dark side of the question of heredity as the fatalists of former generations gave it. The great change that environment and education may bring about in the individual has become recognized and has assumed larger proportions. We are aware, however, that the passions and appetites are much keener and more difficult to control in those who inherit them from a line of ancestry who have never checked them, but in whom vice has been accounted a glory and a virtue.

It is much easier for some who inherit a placid, even temperament, with no strong emotions, to be outwardly virtuous and orderly, than for those just mentioned; but all have it in their power to choose the right, provided their early home training has not been omitted. Habitual selfishnesss, disregard for the rights or feelings of others and gross immorality long indulged in may reduce one nearly to the level of the brute; the vicious act may seem to be due to irresistible impulse, but the perpetrator is none the less culpable. He who willingly intoxicates himself that he may commit murder is still a murderer, and one of the deepest dye of criminals. Life to all is a warfare; to some it is much more severe than to others. None are born with a constitution incapable of virtue, though many are drifting with the current wholly oblivious of their environment. One of the encouraging features in the problem of preventing diseases of the mental faculties in the young and immature child is proper environment. However much the child may have been hampered through his parent's ignorance, or through inherited weakness, the surroundings of life will have a great and lasting effect upon his mental condition. Unlimited wealth and foreign travel are not necessary for his well-being. Favorable home surroundings, where sympathetic natures guide the family life, where sharp criticism and heartless fault-finding are unknown, have much to do in the formation of character and the prevention of mental abnormalities in the young and maturing minds. Where the training of the earlier years is regarded as a sacred trust, though mistakes be made, the after-memory clings with a most tenacious hold, and the motives and impressions then installed are longest lived. These home impressions have much to do with our highest ideals and success in any position in our after-career. Many of our greatest minds owe their success to the home impressions made in childhood by a consecrated mother or father, while, on the other hand, where unfavorable environments harass and annoy at a time when the young mind should be relieved from care, or where there

has been a continual drumming daily on the "mental strings," they will sooner or later become fragile and finally break, causing mental deterioration, such as brain-storm, etc.

At this special period of life the young are more susceptible to vague impressions, and unless special precautions are interposed by parents or guardians mental deterioration in the form of dementia praecox may ensue. This is a disease of early life and a dementing process from the beginning. As school children, some of these patients are bright and receptive, learn easily, are responsive, and show quick, nervous reaction and impressionability. Others have difficulty in keeping up with their classes. While perception and memory are good, reasoning and judgment are not correspondingly developed. They are erratic and lacking in inhibitory control. They are subject to headache and, if pressed, break down in school work. They undergo attacks of dreamy abstraction and find it difficult to concentrate the attention. In some instances erraticism goes over by imperceptible degrees into pronounced mental perturbation. In others there is a sudden change from the habitual states of feeling and acting. This may appear coincident when the boy becomes a man or the girl a woman. It may be that the determining cause is a fever, an injury, or some shock to the nervous system. Symptoms of acute depression or excitement may occur, followed by a characteristic train of symptoms, and of which there are three special classes recognized, the *hebephrenic*, the *katatonic*, and the *paranoid*.

In the hebephrenic form the patient develops a state of reserve, shyness of strangers, and depression, is easily embarrassed, shuns company, is deeply religious, devotes himself to Bible study, is fussy in dress, spends much time in the bathroom and over toilet operations, is addicted to self-abuse, etc. Later in the disease he becomes bombastic, self-assertive and egotistic. He falls into a state of brooding, consults various physicians, reads quack advertisements, becomes concerned about his bodily state and the loss of virility. Delusions of a religious character develop, and he may imagine himself a second Christ.

The second form, the katatonic, has much in common with the hebephrenic. The distinction between them is based largely upon the predominance in the katatonic form of stupidity, states, and a muscular rigidity, negativism, contrariness in conduct, imitativeness and automatism. These patients resist attentions in bathing and dressing as well as the proper care of the person. They complain of being light-headed and of the baneful influence of certain other people. With the many other katatonic manifestations, but more pronounced, there is increased apathy and stupor, besides being unmindful of the functions of the bladder and bowels, which may be arrested voluntarily by his own volition. Many of these conditions are regarded as arising from perverted sexuality.

The paranoid form of this disease has much in common with the hebrephrenic as well as the katatonic forms. The predominant note in theses cases is of egotism and boastfulness. The patient believes himself created for some special mission, to reform society, to promulgate new rules for dress and living. He may believe himself of royal birth and parentage. Impulsive acts of violence may occur at any time when least expected, and he may become dangerous.

These are but a few of the many abnormal conditions that we may observe in this class of mental diseases which take their origin from early childhood, and might have been prevented to a large extent if early and proper training were instituted with a thorough proper course of treatment. In the early beginning of treatment for dementia praecox and the various symptomatic divisions, we must take time by the forelock, beginning with the very onset of symptoms, keeping the patient quiet and away from the outside world for an indefinite time, administering proper nervines, tepid and cold shower baths daily, omitting school-life for at least six months or a year, using only such medicines as reconstructives and nervines, coupled with a full supply of nutritious and healthful diet, fruits, etc.

Strange as it may seem, many of our mental diseases in both childhood and adult life may take their origin from very slight causes, such as a high fever from a protracted disease, like typhoid, tuberculosis, pellagra, uremia, diabetes, influenza, etc. Then we have certain drugs that produce mental wandering, mental imbalance, and, if long indulged in, we may have a mild form of mania bordering on maniac-depressive insanity. Hyosine, cocaine, morphine, etc., and all alcoholic drinks possess

narcotic properties capable of setting up various degrees of brain poisons and mental aberration. Then we have gas poison and World War shocks, trench poison, etc., as amply demonstrated by some of our dough-boys in our government hospitals, whose mental capacity has deteriorated to even that of a twelve year old boy. This is but a common or daily observation to the writer, he having been located near and having access to the great Walter Reed Hospital.

Institutional and vocational treatment, with all that pertains to the welfare and happiness of these unfortunate soldier boys, is being done in a most lavish and commendable way throughout our country. But it seems to me, after much observation in the various municipal and private institutions for mental diseases of both this and other countries, we need more of the *personal humane* feature to predominate the atmosphere of such institutions. As stated in the outset of this paper, the delicate and intricate organization of the nervous system, as furnished and made to function through the central powers of the brain and spinal cord, it is but natural that none but the most thoroughly read and competent experts on mental diseases should be allowed to preside over these institutions and treat the unfortunate victims, many of whom, instead of growing daily worse under unfavorable environment and unsuitable treatment, should in due time regain their normal state. Our past regime in the treatment of these patients has been a reflection and a disgrace on the United States Government, if you will pardon the expression. It is also a burning shame on any state government to allow our hopelessly insane, much less our curable cases of mental disease, to be placed in jail or bound in ropes temporarily, or until a commission of lunacy is appointed and permanent arrangements made for the transmission of the patient to an asylum for the insane. This part of my subject is only partially treated, as space will not permit further comments.

In summing up the various causes of mental diseases, their prevention and cure, as cursorily touched upon in this paper, we have scarcely broached the subject.

In the world's present state of mental unrest in both church and state, supervening upon the world's greatest of all wars, viewing it in all of its sad and heart-rending phases, including the loss of friends and loved ones, homes, etc., and the estrangement of family ties in divorce suits and the like, it is no wonder that mental deterioration is manifesting itself in the world-wide unrest.

Of the 867,420 applicants as volunteers for the World War who were rejected on account of physical and mental disability, over 50 per cent of these applicants were rejected on account of *mental deficiency*, not including illiteracy. According to statistics, in the year 1918 there were in the United States 239,820 insane persons; one-eighth of our population is of foreign birth, and one-third of the insanity of the United States is among the foreign born. According to Dr. Howard Chase, a writer and author on *Mental Medicine*, "mental diseases and insanity are on the rapid increase in the United States." The promiscuous intermingling of races and intermarrying, regardless of the laws of eugenics, and the common intermingling of the sexes with joy-rides at the seashore resorts, etc., with their usual outcome or sequel of divorce suits, which in the end constitute one of the prime causes of mental worry and anxiety, all produce a loss of nerve and brain force, as well as a loss of healthfulness of both mind and body, as does no other agency. Thousands of lives are today doomed to such an existence. Even in the conservative State of Old Virginia we had over 2,900 divorce suits last year, while in one or two other states in the Union there were as many as 4,000 divorce suits in a single year.

Taking a liberal and broad view of the present situation of the prevailing conditions existing throughout the country, the unrest of the nations, the many and varied conspiracies to undermine both church and state, political scandal and rivalry, antagonism bewteen capital and labor, illiteracy and superstition, Bolshevikism, Communism, etc.; these, with some of the modern heresies that are being broadcasted by so-called educated visionaries, have a most wonderful influence for evil over the minds of the young. The tendency toward mental deterioration and insanity is rapidly showing itself in many and various ways. This unfortunate state of world-wide human conditions only emphasizes the importance of the medical profession tendering it "good offices" to the U. S. Government, both State and Federal, toward the prevention and cure of a large per cent of mental diseases, which, if

not properly treated, will finally terminate in hopeless insanity to both the patient and his posterity.

Aside from vicious environmental conditions, we know that tainted heredity from all causes is responsible for the direct inheritance of, and the diathesis to, such mental and neuropathic diseases as the maniac-depressive psychoses, dementia praecox, epilepsy, imbecility, idiocy, feeble-mindedness, Huntington's chorea, Friedreich's disease, Thompson's familial tremors, muscular atrophies and dystrophy, multitple sclerosis, cerebral hemorrhage, arteriosclerosis, the neuropathic constitution, as well as the diathesis to tuberculosis, syphilitic taints, heart diseases, eye defects, kidney diseases, skin diseases, etc., as also cases of alcoholism and certain classes of explosive or impulsive persons who find it impossible to control their impulse and animal instincts.

Some of our ablest investigators and thinkers along these lines have concluded that while race impairment is appalling and preventable, the day and time is rapidly approaching when *more radical steps* should be taken for the prevention and cure of many of the *social evils* prevalent in our country. To prevent the propagation of the grossly unfit, such as the confirmed, habitual criminal, rapist, certain defectives, degenerates, feeble-minded, etc., I am of the opinion that the worst of these degenerates, who cannot be effectively and constantly segregated, should come within the laws enacted by the States of California, Iowa, Indiana, Connecticut and other states of the Union, requring the *sterilization* of both men and women of these classes, under conditions that safeguard their personal and constitutional rights. That these laws, drastic as they may seem, are not considered inhuman or cruel by those to whom they apply, is evidenced by the fact that individuals not coming strictly within the provisions of these laws have, as is recorded in the State of Iowa, requested that they be sterilized by the operation of vasectomy in the male, and by removing and tying off of a portion of the Fallopian tubes in the case of the female.

One of the most urgent reforms in the direction of segregation is better regulation by the local and state boards of health for following up of those suffering from chronic alcoholism and those victims of the narcotic dope habit. "We have in the United States over one million drug addicts at this time, and over 500,000 defectives in intellect, hearing and vision, 2,000,000 in hospitals and homes for the sick, 100,000 in reformatories, and an equal number in prisons, many for life, making approximately 4,000,000 dependents in the United States to be cared for by institutions of charity and the government. In view of the above mentioned conditions, can we define ours as a truly enlightened, highly civilized and efficient nation, in which one person in about every sixteen and one-half must be classed as inefficient, defective or dependent?" (Hon. Jno. J. Kindred, M. D., *J. A. M. A.*)

According to statistics, one-tenth of the women of the world bear all the children that are born; and appreciating the well-accepted idea of the influence of environment and training, how shall we nurture, protect and develop the approximate one-tenth of the human species that bear all the children, who are to become the parents of the future race and nations? These astounding facts and figures are strong enough to convince any thinking mind that, as a nation of the Anglo-Saxon race, we are living ahead of our day, ahead of our generation, ahead of our forefathers. We need to take an inventory of our past history in order to find ourselves, and learn what epoch or era we have arrived at.

A retrospective of our ancestry may enlighten us along certain lines. If we get back to the days of Abraham Lincoln, Zachary Taylor, Andrew Jackson, and others, whose ancestors were of the plain, pure and honest type, rugged, hard-headed, with little college education and scarcely any of the modern society privileges, history shows that these plain pioneers of their respective callings did honor to their country and to themselves. In this rapid-going age we need more of this rugged, honest type of men to guide the ship of state.

"More might be said hereof to make a proof,
Yet more to say were more than is enough."

DISCUSSION.

DR. R. L. RAIFORD, Franklin: The good writer of this paper has conferred on me the honor of opening the discussion, which it is always desired should be free, full and constructive. I agree with him that we are not doing enough for our mental unfortunates. This is true not only as the subject relates itself to our state and private institutional work, but from the very inception of mental symptoms.

In this advanced age of medical enlightenment we must learn to recognize and begin treating the

future mental case during its premental history, just as we treat tuberculosis and cancer. In other words, let prevention, in so far as it is possible, be our slogan in the treatment of this dread malady.

The older method of treatment from the psychiatrists and psychoanalysts standpoint is fine, in so far as it goes, but some of us feel that it often stops short of the essential part of what it is possible to do in these cases. Perhaps it may not seem in good taste for me to make so bold a criticism, but with all deference to those who differ from me, I am thoroughly convinced, both by observation and experience, that we are making at least two serious errors in the treatment of our mentally incompetent:

First.—In spite of the fact that in practically every other instance the word "idiopathic" as an etiologic description of disease has long since been discarded, we still insist that in the case of certain mental disorders the natural laws of cause and effect simply run amuck, that the wheels of progress turn backward for this special ailment, that the once smoothest running piece of machinery yet known to mankind simply gets "cranky" and will not function properly and, presto, we have a well-developed case of dementia praecox, manic depressive or what not that is essentially "functional," or "idiopathic," or, in simple language, we have an effect without a cause. Gentlemen, "there ain't no such animal."

Second.—The first error in which we find ourselves naturally paves the way to the second,—that of throwing up our hands, so to speak, as to a real constructive line of treatment for these unfortunates. For, if we accept the well-known dictum that we cannot intelligently treat a disease until we know its cause, it does not take a Solomon to conclude that the man who occupies the unfortunate position of trying to treat a condition which he is convinced has no cause is not only working at a disadvantage, but is simply licked to start with.

I understand that all of our institutions for the care of mental cases are crowded to the limit. How can they be otherwise when such a large per cent of those admitted are doomed to be a ward on the state until "death do us part?"

We recognize the fact that certain of these cases are amenable to treatment, provided the cause is corrected. Notably among this class are the alcoholics. Why not take the same attitude towards those suffering from the toxins of our friends, "Mr. Streptococcus," or other chronic disease producing bacteria? In institutions where chronic infections are considered a cause of mental disorders, it has been fully proven that, by detoxicating these patients in addition to the usual hospital care and treatment, a much larger per cent are restored to mental and physical health and again become self-supporting individuals.

For those who insist that there is no physical cause for certain types of mental dysfunction, I would respectfully ask an explanation as to why there is such a preponderence of toxic, unhealthy appearing patients in our mental hospitals?

A more or less intimate acquaintance with the activities of the New Jersey State Hospital at Trenton, covering a period of the past five years, has convinced me that Dr. Cotton, its medical director, is blazing a trail that is going to revolutionize our attitude towards and our treatment of insane cases. He not only uses all the beneficial older methods, but, by correcting, as far as possible, all sources of chronic toxemias, has reduced the average stay in that hospital of the so-called functional cases to around thirteen weeks. And these peope go out healthy in mind and body and able to resume their former occupations. If we could make any such showing as this, our institutions would not be so crowded as they now are.

In closing, let me say that "functional" or "idiopathic" must be stricken from our etiologic vocabulary, and that to be content to admit that any disease or symptom is not based on a definite physical cause is not my ideal of scientific professional attainment.

Dr. Keister, closing the discussion: I wish to thank Dr. Raiford for his able and timely discussion on the etiology and pathology of mental diseases. These points, the writer barely touched, owing to the limited time for the discussion of the subject, which should have had at least thirty minutes instead of twenty minutes. In my judgment, this "time limit" should be changed when it comes to the reading and discussion of an important paper and subject of such world-wide importance as the "Mental Side of Medicine."

In conclusion, I wish to read the report of the Massachusetts State Commission on Mental Diseases, which was copied from the American Psychiatric Association proceedings through Dr. Neil A. Dayton, Director of the Massachusetts State Department of Mental Diseases: "The State law requires a study of all children who are three or four years behind in their studies at school, and fourteen traveling clinics are constantly at work, with the result that they found, of the first 4,040 examined, 75 per cent were deficient; 8 per cent had one or both parents mentally diseased, while 84 per cent failed to pass the first grade at school. The average age of those examined was thirteen, while the mental age was only eight years."

From the above data, we can readily see how prevalent mental diseases are among children, and how important it is for our Health Boards, not only in Virginia, but throughout the United States, to take cognizance of the situation. Let our popular Dr. Ennion G. Williams and the Board of Health of Virginia follow, as a close second, the example of our sister State of Massachusetts, in adopting this important regulation.

DEVELOPMENTS IN THE TREATMENT OF PERNICIOUS ANEMIA.

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Dr. Thomas Addison of Guy's Hospital, London, in 1855, first described pernicious anemia, and so it has been called Addisonian anemia. He defined it as an anemia, without discoverable cause whatever, in which there has been no previous loss of blood, no renal, splenic, miasmatic, glandular, strumous or malignant disease. From that time to the period of Osler (and, probably, no better designation may be given to the great medical era in which we of this medical generation

have lived than the Osler period, as this great clinician led the march of advance in present-day medicine and recorded it with a pen, indelibly), from Addison's time then to the time of Osler, who defined pernicious anemia as "a recurring and usually fatal anemia, caused by haemolytic agents and characterized by an embryonic type of haematopoiesis," pernicious anemia has remained etiologically an enigma and therapeutically a baffling antagonist as yet unconquered. So, it would seem that a medical gathering like this may be asked to consider what appears to be a movement of real importance when it deals with some recent development in the etiologic and therapeutic problems of pernicious anemia.

In a synoptic manner let us, for a moment, recite certain accepted items in the pathogenesis of the disease and its diagnosis. Many pages have been written upon the cause of this disease. But it may be said that if all the causes of pernicious anemia were classified they would roughly fall within the following groups:

Causes arising from dietary deficiencies, like pellagra, or beri beri;

Causes emanating from chronic sepsis, as focal infections of long standing;

Causes resulting from altered lipoid metabolism.

Recent studies by pathologists point to the bone marrow specifically, however, as the site of the primary lesions of pernicious anemia, whatever may be the prior agents at work elsewhere. Certain it is, that the abnormal blood formations emanate from bone marrow, which characterize the chief features of the blood picture.

Reliable diagnostic signs of the disease, such as the high color index, and the marked macrocytosis with its many oval and abnormal shapes; deeply stained, large macrocytes; fragmentary cells; microcytes and megaloblasts; its state of leukopenia; its diminished platelets, are derived from abnormal blood formations which may be traced from peripheral blood to bone marrow. Besides this, however, there are probably forces at work that bring about a destruction of red cells themselves. This evidence of destruction of red blood cells is evinced clinically in the patient's rather characteristic color; by an enlargement of the liver and spleen; by fever; and by progressive weakness. Laboratory evidence of blood cell destruction is also made known by the abnormal blood pigment metabolism, as denoted by an excess of urobilin. Urobilin may reach as much as 1.15 grams in twenty-four hours while a normal amount is only .15 grams.

Diagnosis

In the diagnosis of this disease it is well to keep in mind those clinical symptoms which go to make up the picture.

Mouth and Tongue.—In more than 45 per cent of cases, disagreeable sensations of the mouth and tongue are experienced. Burning of anterior half of the tongue; rawness and soreness; tenderness of tongue and mouth are felt. This group of mouth symptoms appears more or less periodically and assumes, in some cases, a position of importance in the symptomatology because of the very decided discomfort and pain suffered by the patient.

Stomach and Intestines.—Besides a loss of appetite, nausea, vomiting, and diarrhea or "loose bowels," the more or less constant association of a diminution or absence of hydrochloric acid in the stomach secretion is found. This achlorhydria is a "leading" symptom. Whether hydrochloric acid suppression is a cause or a result of the disease is a matter of discussion. But, regardless of its real relation, hydrochloric acid is conceded to be indicated in its treatment.

Brain and Spinal Cord.—Changes on post-mortem are more or less uniformly found in the brain and spinal cord. In life, nervous symptoms are experienced, such as disturbances of sensation, numbness, tingling of hands and feet, and signs of changes of the spinal cord such as spastic, ataxic and paralytic phenomena.

Weight.—Many lose weight, but in pernicious anemia there is a queer preservation of the fat and a relatively small loss of weight. After all there is failure of weight with pound loss.

Color.—A striking yellow tint or lemon color to the skin is found in pernicious anemia.

Fever.—There is present in these cases a low grade of fever.

Spleen and Liver.—The spleen is enlarged. It is an intimately associated organ in the blood destruction—whether active or passive. In 40 per cent of cases the spleen is palpably enlarged. So is the liver enlarged, and as the

disease progresses these organs, together or alone, are felt on physical examination.

Blood Picture.—Upon the blood picture depends the diagnosis. What are the essentials of the blood examination? The evidence is gotten from erythrocytes or red cells. The count is of interest. No other disease, says a recent writer, so often reduces the erythrocytes below two million, but patients with red cell count below that figure may not suffer from symptoms. The count may reach a low level of 500,000. The fall from 5,000,000 to 2,000,000 may require months or a few weeks. Red cell counts in pernicious anemia can not be depended upon always to serve as a criterion of improvement or as a standard of the patient's safety. It is proper to add, that an increase of red cells is always, however, to be sought in any stage of the disease. The increased formation of healthy cells and cessation of hemolytic processes in the blood and bone marrow are the ideals of treatment to be striven for.

The hemoglobin content of the blood is interesting because it remains relatively higher than the red cell count; hence, the color index is one or above in pernicious anemia. Quantitatively, however, hemoglobin is reduced.

Abnormalities of the red cells are found in every known form except those with a definite achromia. Macrocytes stand out strikingly as characteristic of pernicious anemia. There are also found microcytes of a deep red color. The irregularity of shape is striking, some being elongated, rod like, or pyriform shaped. Stippling of the red cells is common. Nucleated red cells of all types are found; showers of blast (germ) cells are found at times, indicating an heroic effort of the marrow to regenerate new cells. There are normoblasts of average size, and megaloblasts. There may be intermediates. In certain crises of the disease, nucleated red cells appear in large numbers, and these crises are characterized by a gain in blood values.

But our main theme deals with the newer developments of treatment in pernicious anemia. In retrospect, one must concede the failure of treatment in this disease. Since the Addisonian (1855) period to the present, final prognosis under any current treatment has been bad. Arsenic in various forms, such as Fowlers' solution, atoxyl and arsphenamine have held sway. Splenectomy has had its day. Transfusion has again become the vogue with its modern improvement in technique. Repeated transfusions have been favorably used in some cases. But with all, no remedy has alone abated permanently the tendency to progressive loss of blood values and ultimate fatality.

Hydrochloric acid, alone, has remained in favor. Today as in the seventies, diluted hydrochloric acid in large doses with food, has seemed to help gastric function. The stomach, all but achylic in pernicous anemia, seems to demand large doses of this drug. It holds a prominent place particularly in dietary treatments to be mentioned later.

The value of food, in cases of pernicious anemia, had been pointed out by separate observers since 1872: but little appreciation had been given to such observations. Even meats and green vegetables have been employed generally in the treatment in anemic persons. High caloric feeding had been even touched upon by various writers. Fresh bone marrow had been used as early as 1894 by Fraser (Minot's paper). Small amounts of concentrated bone marrow, and generous use of fresh bone marrow had received favorable comment from a few clinicians. But it remained for Whipple and his associates, within the past few years, in various communications with titles such as "Blood Regenerations Following Simple Anemia", "Blood Regeneration Following Anemia": "Favorable Influence of Liver, Heart and Skeletal Muscles, in Diet on Blood Regeneration in Anemia" to throw the limelight upon food in blood regeneration. Besides McCallum had directed attention to liver and kidney as possessing a protein quality of exceptional value, particularly enhancing the growth. And, also Calkins, Bullock and Rohdenberg (cited in Minot's paper) had shown that foods rich in nucleins stimulate growth. From this Whipple has offered the suggestion that in pernicious anemia "there may be a scarcity of the material from which the stroma of red blood cells are formed" or that there may be a disease of the stroma, forming cells of bone marrow. The action of complete proteins, derived from liver, skeletal muscle, bone marrow, and kidney, in seeming to enhance the formation of red blood cells in pernicious anemia, by supplying material to build cell stroma, at least appears to offer

ground for a fascinating speculation, with a real hope of a new truth as indicated by recent results in treatment of this disease.

Liver Feeding in Treatment

Following up the suggestive work of Whipple and his co-workers, as to the favorable action on dogs of liver, heart and skeletal muscles in the diet for blood regeneration in anemia, Minot and Murphy began a series of observations upon some patients with pernicious anemia. This investigation was begun prior to August 1926, at which time they reported the effect of their observations on forty-five patients. Their early observations in pernicious anemia were favorable. The value of a diet rich in complete proteins and iron—particularly liver—and relatively low in fats was impressed by general improvement in clinical blood evolution of these cases.

Let us note the observations of Minot and Murphy in the first group of forty-five patients, and, later let us comment upon their observations in another group, which included all cases seen.

The first group were placed upon a diet, made as palatable as possible, with the following special specifications:

1. From 120 to 240 grams (four to eight ounces), and even more, of cooked calf or beef liver. As a substitute, a like quantity of lamb kidney was used. This amount was given daily.

2. Beef or mutton was given in 120 grams or more daily.

3. Not less than 300 grams of vegetables, containing 1 to 10 per cent carbohydrates, was given daily.

4. From 250 to 500 grams of fruit, like peaches, apricots, strawberries, pineapple, oranges and grapefruit, was given daily.

5. Only 40 grams of fat, obtained from butter and cream, was allowed daily. Animal fats and oils were interdicted.

6. Eggs, milk and bread were given in addition, making the general plan of the diet conform to the following prescription: 340 grams of carbohydrate; 135 grams of protein; and not more than 70 grams of fat, making a total caloric calculation of between 2,500 to 3,000 per day.

Experience soon showed that it was impossible to attain in all of the cases this intensive program of diet. It is a clinical experience which meets no exception here, that general rules and standard of treatment are inapplicable in every individual, particularly at the beginning of such a program. So each patient was treated with an individual plan. Sometimes only a thousand calories daily for the first week was possible. During the second week, and subsequent weeks, appetite and digestion were found to be improved in most cases.

This plan of feeding was supplemented by rest in bed, and by the administration of 15 c.c. of dilute hydrochloric acid (U. S. P.) in water each day. This was subject to individual requirements also. Only three of these cases received blood transfusions.

The forty-five patients of Minot and Murphy had had definite symptoms of pernicious anemia for two years before beginning this diet. Two had shown some symptoms for ten years. Many of the cases had been observed by Minot and Murphy for a year; some for a few months; some only a few days before beginning this special diet.

As well as could be done, the patients were thought to be beginning the treatment in the following stages of the disease: (1) twelve in their first distinct relapse; (2) seventeen in their second relapse; (3) sixteen in their second or more relapses. So, it appears that this treatment was placed upon trial in various phases of clinical evolution of the disease.

Spontaneous improvement, so often following the first relapse, could not explain findings observed, as will be shown. The forty-five cases of pernicious anemia began to evince rather rapid improvement after beginning the diet, and all except one, after having taken the diet from two years to five months, have continued to show improvement.

What are the signs of this improvement?

1. A change in the frequency of the stools; instead of diarrhea-like stools, there was usually one large formed stool with more normal gross appearance.

2. In two weeks, and sometimes at the end of the first week, a definite rise of the reticulocytes (young red corpuscles), from 1.0 per cent to 8.0 and 15.0 per cent of all the red cells was noted. The icterus index of the blood was observed to fall, and the yellow tint of the skin faded away at the same time. This icteric

index appeared to reach normal in two to four weeks. These blood changes were observed in cases early; before the red blood counts had attained 2,500,000 red cells per cubic millimeter.

While the average cell count in the forty-five cases at beginning of the treatment was, in round figures, 1,470,000 red cells per cubic millimeter, one month afterward, the average was round 3,400,000 for all, and in twenty-seven cases, from four to six months after the dietary treatment was begun, the red cell count averaged about 4,500,000 cells per cubic millimeter. It is worthy of note that patients of the group having had two or more relapses showed an average lower red cell count at the beginning of the treatment than did those who started after only one or even two relapses. All except three of these patients were in good state of heath at the time of Minot and Murphy's first paper (August 14th, 1926, *J. A. M. A.*). So much for the first group.

These authors, Minot and Murphy (*J. A. M. A.* Sept. 3, 1927), one year following their first paper, submitted additional observations. In this communication they gave further observations upon the first group of forty-five cases, covering a period of clinical investigation of from about one to three years, and they submitted data upon the effects of this diet, in sixty-five additional cases of pernicious anemia, making a total study of 105 patients with this disease—a remarkable number for clinical study. In a few of the cases, other physicians participated in securing the data submitted.

Of the 105 patients, ninety were placed on this diet when the red cell counts were below 2,700,000 and with an average for the ninety of 1,480,000 per cubic millimeter; and the other fifteen began the treatment when the counts were above 2,800,000. The combined reaction of these two groups was that there was a prompt response to liver feeding and rapid improvement in the patients; the blood of the early ones remained in good condition and the blood of the later ones quickly made improvement over the former condition. One of these patients died in four months with marked degeneration of the spinal cord, although the red cell count was 4,300,000 per cubic millimeter before death; another whose blood was improved less than any other patient's of this report, died at the age of seventy-one from cerebral hemorrhage; a third died by accident in an automobile collision, having 4,500,000 red cells two weeks before death.

The increase of red cell count in ninety of these patients in the first three weeks brought the count to over 3,000,000 cells per cubic millimeter from an average of 1,480,000 cells, while the remaining fifteen patients, who had an average at the beginning of treatment of 2,800,000, showed the same rate and amount of increase. The initial high color index fell as the cells increased; when the count became high, the index was one or less. The average diameter and volume of the cells rapidly became normal or smaller than normal. The white cells also increased to normal, reticular cells increased in number, and blood platelets increased. The bile pigments in the plasma decreased.

Reason for Choice of Liver and its Possible Modified Effect

On reviewing the work of Minot and Murphy, one is called upon to note the reasons for choice of liver in pernicious anemia.

1. The similarity of certain outstanding symptoms in a group of diseases which were known to be due to or associated with faulty diet. The symptoms of the gastro-intestinal system, the central nervous system and hematopoietic systems, so outstanding in pellagra, sprue and berberi (diseases of blood deficiency) are significant of pernicious anemia.

2. The history of all pernicious anemia patients is a history of abnormal feeding, abstinence from red meats and excess of fats.

3. The geographic distribution of the disease is not substantiated.

4. The improvement of cases of secondary anemia by food adjusts, and also association occasionally with known faulty diet.

5. The fact that patients with pernicious anemia often had better health when placed on a well balanced and high caloric diet containing an excess of nitrogen.

No review of recent work in this baffling disease (pernicious anemia) should fail to present the observations of Koessler and Maurer, who presented their findings in two papers; one entitled "The Relation of Anemia, Primary and Secondary, to Vitamin A Deficiency" (*J. A. M. A.*, August 14, 1926), and the other entitled, "Treatment of Pernicious Anemia with a High Caloric Diet, Rich in Vita-

mins." (*J. A. M. A.*, September 3, 1927). This work was done at the Sprague Memorial Institute and the department of Pathology, University of Chicago.

The idea that there existed a definite relationship between a faulty diet (Deficiency in Vitamins) and severe anemia (pernicious in type) was gotten by Koessler through contact with a patient, who had entered the hospital, diagnosed scurvy and who had presented symptoms of sore mouth and gums, subcutaneous hemorrhages and pains on pressure over the bones (scurvy-like symptoms) but who had showed blood findings characteristic of pernicious anemia. This patient had given the history of an extremely restricted diet for many years, consisting of coffee and starches entirely, and devoid of any considerable elements of essential vitamins A, B and C, or D.

A case of pellagra also had entered the service of this hospital and had presented something of the same history, with skin lesions, nervous symptoms but with normal blood findings.

This idea inspired a series of experiments. These experiments were conducted upon white (albino) rats. Being an omnivorous animal, and being the best animals for vitamin studies, white rats held out promise of the possibility of producing a disease (pernicious anemia) thus far only known in man. The rats were divided into three groups; they were first put on a slightly modified laboratory diet used by Cramer; a low fat soluble A Diet (similar to the diet of many humans).

Diet I

Bread	30.0 Grams
Rice	20.0 Grams
Corn meal	20.0 Grams
Casein	12.0 Grams
Minerals	5.0 Grams
Cotton Seed Oil	12.0 Grams
Brewer's Yeast	100.0 milligrams

to each rat.

The animals were fed as much as they would eat.

Diet II was the same except cod-liver oil 12.5 c.c. was substituted for cotton seed oil. This diet is rich in fat soluble A and also in water soluble B.

Diet III contained no fat soluble A. Fat soluble A was extracted.

Rats kept on vitamin-A-free diet, for from eight to twelve weeks, eventually began to decline, became emaciated, refused to eat, lost weight, lost muscular co-ordination and exhibited chronic convulsions. These animals were saved by careful administration of glucose and saline solutions intraperitoneally injected, and later quickly improved by the addition of cod-liver oil or butter, forced into the mouth in a weak solution of sugar and sodium bicarbonate.

These animals, carefully given a diet increasingly rich in vitamin A, regained normal health but never regained normal size. The blood changes in these animals on vitamin-A-free diet was characterized by a drop in both erythrocytes and hemoglobin; this blood change occurred as weight of animals fell. The color index in these experimental animals remained around one. These drops were followed by a rise of both erythrocytes and hemoglobin. The details of these experiments are interesting but must be passed over to reach the statement of the authors that "the experimental data seem to show that the addition of a small quantity of vitamin A to the diet of an animal, long depleted in its vitamin reserve, brings about rapid formation of new blood cells". And as the initial statement in their second article (1927) above noted, they affirm that this work seems to show the experimental production of a blood picture in animals, which in all essential details shows a striking similarity to human pernicious anemia. As a result of the above noted experiments they have reached the following conclusions:

1. The fat soluble vitamin A is essential for normal blood regeneration;
2. The addition of vitamin A to the diet of animals long depleted in their vitamin A reserve brings about rapid formation of new blood cells;
3. A definite relationship exists between a state of chronic vitamin deficiency and certain anemias in man; and
4. The routine use of a rational, balanced diet rich in vitamins A, B and C, has proved of decided value in blood regeneration of patients suffering from pernicious anemias.*

The following dietary requirements in vitamin treatment of pernicious anemia should be observed, according to Koessler and Maurer.

*See J. A. M. A., August 14, 1926, and September 3, 1927.

The vitamin quality of certain foods must be known. For instance, vitamin A is supplied in giving cod-liver oil 5 c.c., four times daily. Butter is given in five to 6 prints or pats (30 grams) on vegetables or bread, each day. Whole wheat bread, made with milk, is richer in vitamins A and B, than is white bread. Whole milk and cream, especially in summer, contains a rich content of A and B vitamin.

The following vegetables are important: tomatoes, fresh or cooked, are given daily (if necessary canned), because they are very rich in vitamins B and C and also contain a small amount of A. Spinach for its A and B, lettuce for its A, B and C, cabbage fresh (raw) for its A, B and C, and carrots for its A, B and C, are the leading vegetables for anemic patients. In addition or as variety demands, string beans (snaps) (A, B and C). Swiss Chard (A and B), dandelion (A and B), cauliflower (A, B and C), peas (A and B) sweet potatoes (A and B), squash (A). To this fruits are given daily in order to get adequate C vitamin and some A and B: oranges, lemons, grapefruit, pineapple, strawberries, apple sauce and bananas. Such meats as liver and kidney, containing largest amount of vitamins A and B and also C are given.

The patient should be required to attain an intake of 2,500 or 3,000 calories daily. This may take time, as some patients are in a low state, and unable to take as much food as this program calls for.

One of the paramount difficulties in the treatment of pernicious anemia is the lateness of the stage in which the disease is brought to the hospital for treatment. Even when patients are brought in in a semi-conscious or delirious condition, an attempt at the administration of rich vitamin diet in liquid form is to be resorted to, and may be introduced by a stomach tube. Such patients may be given orange juice, egg nog, wheat germ extract, a liquid liver extract, and small quantities of milk. This may save the patient, as it did the rat. Transfusion in such patients is fraught with danger, but may be tried; protein shock to such patients may prove fatal.

Forty-two patients with pernicious anemia were treated by Koessler and Maurer with this rich vitamin, high caloric diet for from six months to two years. Ninety per cent of these patients were severely ill at the beginning of treatment, ten or (23.7 per cent) had a red cell count of from 550,000 to 1,000,000, at the beginning of the treatment, thirteen or (30.9 per cent) had a red cell count between 1,000,000 and 1,500,000, and eight or (19 per cent) had a count between 1,500,000 and 3,000,000, eleven or (26.2 per cent) had a count of 3,000,000 or more.

As immediate, if not ultimate prognosis, is influenced materially by frequency or number of relapses, it is worth while to say that twenty of these were in the first attack, thirteen in their second, four in their third, four in their fourth, and one his fifth relapse.

What improvement was gotten by Koessler and Maurer in this group?

1. Within two to three weeks polychromatophilic cells (immature) and reticulocytes (young) increased in number.

2. Increase of the red cell count and of hemoglobin was noted but was different in individual patients, apparently being influenced by the number of relapses experienced: those with more than one relapse, took a longer period to show increase, but the red cell count of all forty-four patients was between four and five millions in eight to fourteen weeks after this dietetic treatment was begun.

3. Icterus index decreased as red cells increased. Patient's color improved losing subicteric waxy appearance.

4. Subjective symptoms in all patients were definitely improved: feeling of warmth took place of "cold" and numbness of the extremities; increased interest in life and environment took place of apathy; appetite improved, and sense of well-being was experienced.

Eighty per cent of these cases showed improvement of the nervous system (spinal cord changes) and were improved in subjective and objective signs.

One may not close even so incomplete a review of the latter day treatment of pernicious anemia without calling attention, at least in a word, to the paper by Macht (*J. A. M. A.* September 3, 1927), entitled, "Pernicious Anemia—an Experimental Contribution to the Etiology, Diagnosis and Treatment".

Macht has evolved a phytopharmacologic test which demonstrates the toxic properties of blood serum of pernicious anemia patients, and this test has enabled him to make a differential diagnosis from other blood diseases, and has served, by its power to detect pernicious anemia toxins, to evaluate various

methods of treatment now being used. If these ideas are correct, an important factor in diagnosis has been discovered. Having determined by this test the presence of a specific toxin, Macht has used it in testing the following treatments:

1. Transfusion was found to be able to remove this toxicity from the serum for only a short time. Macht says, referring to pernicious anemia, "transfusions do not permanently or for any length of time eliminate the toxic substance."

2. The effects of liver treatment were variable, as tested by this method. In some the toxicity was markedly lowered; in others, not at all.

3. Because of the favorable action of sun light in anemic cases generally, a group of patients with pernicious anemia were tested after radiation treatment by ultra-violet ray. This test by Macht showed a marked decrease in the toxicity of these blood specimens.

Effect of Ultra-Violet Rays Plus Sensitizers.—This treatment consisted in use of ultra-violet rays (mercury vapor quartz lamp) after administration of eosin (or tetrabromfluorescein) 20 or more milligrams per dose. A lesser toxicity of the serum was obtained from this in pernicious anemia.

Effect of Organic Mercurials.—The use of mercurochrome-220 soluble in pernicious anemia was also commented upon by Macht. It was found that in a few cases of pernicious anemia treated by Dr. McLoughlin, blood serum toxicity decreased as the clinical picture of the cases improved.

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URETERAL CALCULI WITH SPECIAL REFERENCE TO MANIPULATIVE TREATMENT.*

By WM. D. GOODMAN, M. D., Washington, D. C.

Introduction

There is no other condition presenting itself to the urologist which requires such a nicety of judgment and proper handling, as that of ureteral calculus. The X-ray ureteral catheter and the introduction of manipulative ureteral instruments have established the basis for modern treatment of ureteral stone. They have greatly reduced the surgical operation and the economic advantage of this can scarcely be overestimated.

*Read before the Medical Society of the District of Columbia.

Etiology

The etiology of ureteral stone is that these concretions are first formed in the kidney calyces, subsequently migrating into the ureter. It has been definitely established that some infection in the kidney pelvis is necessary for the development of stones, plus urinary stasis and a supersaturation of a stone-forming material in the urine. The organisms which have been found in the center of urteral calculi are usually a strain of streptococcus, also bacillus coli, bacillus pyocyaneus, and bacillus proteus. A specific organism has been isolated from the teeth and tonsils of urolithiac patients by Rosenow and Meisser.[1] Also Bumpus and Meisser[2] collected streptococci from the teeth, tonsils and even blood from a pyelolithiac patient and injected them into eighty-one rabbits, producing kidney lesions in sixty-three.

Pathology

We note that the ureter is composed of three coats, an external or fibrous, a middle or muscular, and an internal layer of mucosa. In a case of stone which has but recently appeared in the ureter, involvement of the mucosa is all that is noted. When there are one or more stones present over a period of time, there is a gradual accumulation of round cell infiltration into all the layers of the ureter, a condition which we may well designate as chronic interstitial ureteritis. In this inflammatory portion of the ureter, there is a deposit of lime salts, which may falsely enlarge the size of the stone on X-ray examination. These stones sometimes produce a small diverticulum in the ureter with the formation of a small pus sac, this giving rise to adhesions surrounding the external ureteral wall.

Symptoms

There are no pathognomonic diagnostic symptoms of ureteral calculi, as some believe. The one cardinal symptom is pain; next is hematuria. There may be urgency and frequency of urination. Nausea and vomiting are sometimes present. The pain is usually what brings the patient to the doctor. It is of great violence, doubling up the victim into a knot, causing him to go through all sorts of gyrations in an attempt to relieve himself.

It has been testified by women who have borne children, that the pain with stone is more severe than labor pains. It may be a dull ache over a portion of the kidney or

ureter. The location of this pain is, however, no index as to the location of the stone.

Attacks of stone pain may be frequent, every two or three weeks, or they may be every six months. There is no set rule. At times the periods are even a year or more apart.

Pain may be referred, and usually is in men, down and into one of the testicles, depending on which side the stone occurs. Acute pain is due to obstruction causing an acute pressure and distention of the ureter and renal pelvis. Hematuria is always present and varies from microscopic to a very pronounced bloody urine. The appearance of blood, visible to the naked eye, as a rule only occurs at irregular intervals. It may be previous to, during, or after an attack. Gastro-intestinal symptoms, such as nausea, vomiting, etc., only occur in acute attacks. Urgency and frequency are, at times, complained of, but are by no means constant. There may be a total retention of urine, thus extending into an incontinence. There may be fever and a slight increase in leucocytes. Leucocytosis is particularly marked in cases of acute obstruction, many times ranging from 20,000 to 30,000.

In cases of high leucocyte count, there is always cause for careful thought, as these patients sometimes require quick operative interference. Pus in the urine is another symptom which is constant, but may occur in any other urinary lesion. Thus, to recapitulate, there may be the following symptoms: pain, hematuria, frequency, etc. All of these signs call for a complete urological examination, ureteral catherization, renal function tests, pyelography.

Stones may occur at almost any age, but statistics show that most occur between the ages of twenty-five to thirty-five. We may, for convenience sake, call this the stone age, and, I may add, it is rather rare for stones to occur in people over fifty years. In regards to sex, it has been shown that women are affected with ureteral stone more often than men, in the ratio of two to one. This should be the logical expectation in view of the renal infection, plus obstructions which occur in the urinary tract of women. This applies particularly to women who have borne children.

The location of the ureteral stones show that about 70 per cent are found in the lower third of the ureter. The teaching that stones were most frequently lodged in the natural constriction of the ureters is now known to be incorrect. They may locate anywhere.

Diagnosis

The diagnosis of ureteral calculi cannot be made by symptoms. The X-ray ureteral catheter inserted into the ureter and a picture taken is our sheet anchor for definite diagnosis. If a stone is high up on the right side, we may differentiate this concretion from gallstones by the use of the Graham technique, taking a side view of the patient. Again, I want to repeat the importance of doing a complete urological examination because of the frequency with which surgeons mistake ureteral stone for appendicitis. It has been estimated in surgical hospitals that 15 per cent of stone cases have had their appendices removed. This is by no means a credit to the profession.

Fig. 1.—Arrow points to calculus and shows dilator just below the stone.

A definite diagnosis should not present much difficulty if a complete urological examination is done. It is possible for an acute appendix and ureteral stone to be co-existent. This is, however, rather infrequent. A definite diagnosis sometimes can be made by palpating the stone per rectum if it is in the lower ureter. In females a vaginal examination is of the same value.[3]

Treatment

Experience has shown that 50 per cent of ureteral calculi will pass if given a reasonable length of time. These cases, therefore, come under the heading of medical treatment, or a

better term would be expectant. The other 50 per cent are surgical cases, to be relieved either by operation or manipulation. A fourth method of treatment, which is last, but not least, is to prevent the reformation of these concretions.

Therefore, each case is a law unto itself, and it is a matter of keen judgment which method to pursue. A few rules have been formulated to indicate surgical interference:[4]

1. A large stone, more than one and one-half centimeters in diameter, with no progress through the ureter, causing acute blockage with pus formation involving the kidney parenchyma.
2. When the kidney is being gradually distended, causing hydropyelonephrosis.
3. When reflex anuria occurs, causing impending uremic poisoning.
4. When the patient has severe reactions on cystoscopic examination.
5. When other diseases contra-indicate long attacks of pain.

When the above conditions do not exist, manipulative methods are in order. Manipulative treatment is a large field and will offer great possibilities because of its simplicity, and also from the patient's standpoint. They all desire to avoid an operation. The various instruments which have been devised give us a verstatility of approach for removal of these concretions. These manipulative instruments each has its outstanding advantages in removing stones, depending upon the location, size, and degree of implantation into the ureteral wall. The fundamental principle is not to actually drag or pull the stone from the ureter, but to dislodge the stone from its impacted bed and to dilate the ureter from below, thus giving the stone an easier passage.

As early as 1904, Bransford Lewis[5] brought out the point that the passing of a ureteral catheter will sometimes dislodge the stone and cause it to pass. Braasch and Moore believe it is the change of axis which starts the stone to descend. Crowell and others believe the injection of a lubricant is at times of value. The in-dwelling catheter deserves mention; also progressive ureteral dilatations are of value. However, when these procedures fail, we still have the following methods at our disposal:

First, I will mention the Damon A. Brown stone dislodger. The method of manipulation, after the instrument has been introduced into the ureter, is to expand the instrument beside the stone, as seen through the fluoroscope, using a set bony landmark which is at the level of the calculus, then rotate the entire instrument in an endeavor to turn or dislodge the stone.

The use of the W. C. Stirling[6] forceps is of value when the stone is lodged within the intramural portion of the ureter.

Next is the Welland Howard ureteral corkscrew instrument. It is of value in the intravesical portion of the ureter.

Next, the dilating bags of Dourmaskin,[7] which may be employed to great advantage.

The use of the whalebone olivary tipped, bullous ureteral bougie has been used with great success by G. M. Laws,[8] of Philadelphia, in removing ureteral calculi high up.

The above manipulations mentioned are carried out as follows: The patient is given one-sixth grain of morphine and one-hundredth grain of scopolamine before going to the operating room. The cystoscope is passed in the usual way, using 4 per cent novocain to anesthetize the urethra. The ureter is catheterized, and a 4 per cent solution of novocain is injected into the ureter. This is allowed to stay in for ten minutes; then the fluid is withdrawn and sterile olive oil is injected. Then we are ready to try the manipulative treatment.

After ureteral stones have been removed, it is very important to take measures which will in all prabability prevent the reformation of these concretions. All foci of infection should be removed, such as infected teeth and tonsils. Conditions causing urinary stasis should be corrected, such as strictures of the ureter, kinks of the ureter, and ptosed kidneys. Intra-abdominal tumors may also be mentioned. Diuresis maintained at a high level by a liberal fluid intake provided cardiovascular complications are not present. It is wise to tell the patient to get a urinometer and take the specific gravity daily, maintaining it at a level of about 1.012. In order to prevent the precipitation of phosphates, the urine should be acidified by the regular administration of phosphoric acid. The protein intake should be restricted to a total amount of about 70 gm. a day. Liver, brains, thymus, spleen, kidneys, sardines and anchovies should be excluded from the diet. They show a rather high nu-

clein content that leads to an increase of uric acid. A high content of uric acid in the blood is apt to lead to the precipitation within deranged kidneys of uric acid in crystalline form.

Of vegetables, tomatoes, spinach and rhubarb are better avoided on account of their high content of oxalic acid.

Summary

1. Ureteral stones are formed in the kidney calyces and subsequently migrate into the ureter.

2. There are four factors which enter into

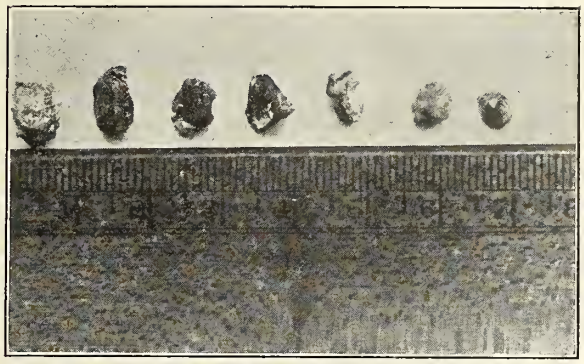

Fig. 2.—Specimens removed by ureteral manipulations.

the formation of ureteral stones; first, infection; second, stasis; third, colloidal changes in the urine; and fourth, a supersaturation of some stone forming material.

3. X-ray is the sheet anchor for diagnosing ureteral stones.

4. Pain is the outstanding symptom of ureteral stones.

5. Seventy per cent of stones lodge in the lower third of the ureter.

6. Most stones occur between the ages of twenty-five to thirty-five.

7. Fifteen per cent of appendices removed are later found to be really cases of ureteral calculi.

8. Fifty per cent of ureteral calculi are passed if given a reasonable length of time. Fifty per cent of cases are surgical and of these 50 per cent, 80 per cent can be relieved by manipulations.

9. The introduction of manipulative instruments has brought about the possibility of removal of ureteral stones without operation.

10. Dilatations failing, extra-peritoneal ureto-lithotomy is the operation of choice.

11. After stones have been removed, prophylactic treatment should be instituted. Correct strictures, ureteral kinks and relieve ptosed kidneys and other conditions causing urinary stasis. The urine should be kept acid, and specific gravity not over 1.012.

12. The diet should be corrected according to the chemical make-up of the offending stone.

References

1. Rosenow and Meisser. Nephritis and Urinary Calculi After Production of Chronic Foci of Infection. *Journal of American Medical Association*, 1922. Vol. LXXVIII, p. 266.
2. Bumpus and Meisser. Focal Infection and Selective Localization of Streptococci in Pyelo-Nephritis. *Archives of Internal Medicine*, 1921, Vol. 27, p. 326.
3. Judd, A. M. Technique of Vaginal Palpation of the Uterus and Ureterotomy, Their Advantages and Possibilities. *New York Medical Journal*, 1920, Vol. CXI., p. 986.
4. Thomas, G. E. *Minnesota Medicine*, 1923, Vol. VI, pp. 226-232.
5. Lewis, Bransford. A New Sign in the Diagnosis of Ureteral Stone. *Journal of Urology*, 1922, Vol. II, pp. 487-498.
6. Stirling, W. C. Ureteral Forceps. *Journal American Medical Association*. Vol. 88, No. 12, March, 1927. pp. 924-925.
7. Dourmaskin, R. Dilatation of the Ureter with Rubber Bag in the Treatment of Ureteral Calculi. *Journal of Urology*, 1926, Vol. XV., pp. 449-460.
8. Laws, G. M. A Contribution to the Technique of Extracting Ureteral Calculi and Dilating the Ureter. *Journal of Urology*, XVII, 1927, pp. 661-662.

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THE ULTRA-VIOLET RAY, AND ITS USE IN TUBERCULOSIS—WITH CASE REPORTS.*

By GARNETT NELSON, M. A., M. D., Richmond, Va.

It is not the purpose of this paper to make an attempt to contribute anything to existing knowledge in regard to the use of light in treating tuberculosis. It is merely a republication, or re-arrangement of other contributions, in the hope of promoting a more general familiarity with the clinical application of light, and is justified by a belief that certain cases of tuberculosis can be readily cured by its use that can not be cured without it, while other cases that may in time respond to other methods will, if light is also used, respond more promptly and with better final results. On the contrary, it is a serious error to think

*Read at a Staff Meeting of the McGuire Clinic, December 20, 1927.

that light is beneficial in all tubercular processes, an error that may speed up or effect a fatal termination. The indications are fairly clear cut. They will be discussed more fully later on in this paper.

Now, in order to make the best use of the ultra-violet ray we must have a fairly adequate knowledge of three things,—we must know the tissue and chemical reactions to the tubercle bacillus, and we must know as far as they are known the tissue and chemical reactions to light, and the relation of each to the other, that is, the effect of the reactions to light on the reactions to the tubercle bacillus, whether beneficial or injurious.

Our first general knowledge of the use of light in this country begins with the publication of Rollier's book in 1913. The first case treated in Richmond was treated in May, 1921. We will first discuss fairly fully the ultra-violet ray. We are all familiar with the colors of the visible solar spectrum from violet to red. Beyond the visible red rays there are the infra-red and beyond the visible violet there are the ultra-violet, the rays of different wave lengths possessing different properties. The ultra-violet rays from sunlight vary in wave length from 390 to 290 millimicrons (a millimicron is one millionth of a millimeter). Artificial rays may be as short as 185. All wave lengths have some heat and chemical energy, with most of the heat in the red and infra-red, most light from red to violet, and the chief chemical or actinic energy in the ultra-violet. The ultra-violet loses this property entirely if obstructed by certain substances, such as ordinary window-glass, so that chemically there is no such thing as a bright shunshniy room if the windows are closed. Its properties are enhanced by heat and by moving air. They are impaired by moisture and dust, and are to a great extent lost in penetrating atmosphere to reach low lying countries. They are much more intense around midday than in the early morning, or late afternoon, and are intensified by reflections as from snow, sand, ice or water. Their intensity is greatly affected by seasonal variations, being greater in the summer months, greatest in July. One summer day with dry air may have as much radiation as a whole month of damp days in winter. The nearer the equator, the less the seasonal variation.

Incidentally one question should be asked and answered very early in any discussion of the ultra-violet ray. The question is,—Is the effect that the ray may or may not have on the skin and its blood vessels and nerves a matter of much importance? The answer is that it is a matter of tremendous importance and is well illustrated by the timeworn comparison of the skin and the kidneys. A whole kidney, that is one-half of the total kidney tissues, and part of the other may be destroyed without in any way affecting the health, and a total suppression of urine for as long as fourteen days is not incompatible with life; whereas the destruction of as much as one-third of the skin must be followed by death. The skin is a vast field of living cells, exposed to stimulation or injury, and the effect of the ultra-violet ray is to increase its respiratory, excretory and protective powers. The ultra-violet ray will penetrate the skin to a depth of 1 millimeter, reaching the rich capillary beds in and under the skin, producing marked physical and chemical changes.

The ray is absorbed by hemoglobin, also by blood serum. It will cause hemolysis of red blood cells in vitro. It will stimulate, coagulate, or destroy protoplasm, and convert egg or serum albumin into globulin. It causes erythema, pigmentation and desquamation. It renders cholesterol, which is normally present in large amounts in the skin, anti-rachitic, having the same effect on cod-liver and other oils, fats, milk and certain vegetables. Radiation of a pregnant mother makes her milk anti-rachitic. In anemia it will increase the number of red cells and platelets, and raise the percentage of hemoglobin. It increases the bacteriophagic and bactericidal power of blood serum and leukocytes.

The effect, if any, of the ultra-violet ray on metabolism can not be stated quite so clearly. Authorities are not in full accord and the published evidence is a little confusing. Metabolism is considered under two heads, mineral metabolism and basal metabolism. On account of the fact that in tuberculosis alone of all infections a part of the healing process is a deposit of lime salts within the tissue reacting to the tubercle bacillus, that is within the tubercle itself, an immense amount of work has been done in an effort to reach some conclusion acceptable to everyone in regard to the effect of tuberculosis on the blood calcium, and by the administration of calcium, or the

use of the ultra-violet ray, to offset demineralization if such a thing exists in tuberculosis. The questions of demineralization, and the use of calcium, and the effect of light on mineral metabolism, especially that of calcium, cannot be dismissed as of no significance, though, as was said above, the published reports of experimental studies with their conclusions are confusing.

Strong presumptive evidence that calcium can be gotten into the human system in some way so as to help prevent or cure tuberculosis lies in the well known fact that workers in lime and plaster-of-Paris are relatively immune. There does not seem to be any argument about this, nor about the specific relationship between immunity and occupation; still we find as follows: "In tuberculosis there is no disturbance of the calcium metabolism." "Oral administration of calcium does not increase the amount of calcium in the blood and tissues in experimental tuberculosis." "The calcium of normal persons is made no greater by giving ninety grains of calcium lactate daily for ten days." "Calcium alone, or combined with thyroid or parathyroid gland, does not cause an increase in the serum calcium of tubercular patients." "Exposure to the ultra-violet ray has no effect on the blood calcium of tubercular individuals." Denis and Minot say that it is impossible to increase the concentration of calcium in plasma by ingestion of calcium salts. Conversely, we find that Rollier believes that there is a demineralization in tuberculosis, and that the ultra-violet ray does offset this and raise the blood calcium and phosphates. Another author reports that seventy-five grains of calcium chloride by mouth daily raises the plasma calcium 2.5 milligrams per 100 c.c. M. E. Fries states that the increase in blood calcium and phosphorus during radiation is well known. Another author reports injecting intravenously one and one-half grains of calcium chloride every other day with a marked rise in the blood calcium that is maintained for approximately forty-eight hours. He, of course, gives the usual warning against gangrene.

So much, briefly, for the diversified views in regard to mineral metabolism in tuberculosis, the effect of the administration of calcium, and the effect of the actinic ray. It seems proper to make the following comments: Entirely too much attention is being paid to the amount of blood calcium, which may be of no significance whatsoever. The whole question may be one of the storage of calcium, of which not everything is known. The specific tissue reaction to the tubercle bacillus, that is the tubercle, heals for the most part by calcification. The actinic ray to some extent promotes the calcification of tubercles, though, of course, the chief benefit is associated with resolution and absorption.

Basal metabolism is mentioned only to dismiss it. There is no fixed relation between tuberculosis and basal metabolism, nor does a single radiation, nor does a series of daily radiations cause either a definite rise or fall.

In regard to the tissue reaction to the tubercle bacillus, we may have an acute inflammation, a lobar or bronchopneumonia, in no way differing from other acute inflammations or pneumonias, but as a rule the reaction is the specific tubercle, occurring singly, or in conglomerate masses, proceeding to caseation, softening, and liquefaction, or on the other hand to calcification, or fibrosis, or resolution and absorption.

Too much stress must not be laid on the local pathology for fear of losing sight of the fact that tuberculosis is a constitutional disease. It is not convenient at this time to go into a consideration of the problems of constitution, or disposition, whether inherited, acquired, or racial, nor those of immunity and resistance; but the terms local or surgical tuberculosis should be used guardedly, although in this day of thorough general studies, of pre-operative caution and post-operative care, we are not apt to lose sight of the fact that we are dealing with a local manifestation of a constitutional disease.

The effects of the actinic ray are fairly parallel to the effects of tuberculin, namely a local, a general and a focal reaction. Proper dosage of light causes erythema, improved appetite, a sense of well-being, and promotes sleep, and causes in the region of tubercular foci an increased supply of blood with more erythrocytes, a higher percentage of hemoglobin, and added bactericidal power. Overdosage causes local stasis, formation of thrombi or even a complete destruction of the skin; lost appetite, a sense of fatigue or malaise, insomnia, and a mobilization of bacilli with rapid dissemination of infection. In those who should receive the actinic ray the effect

is striking, and we may expect a rapid relief of subjective symptoms with resolution and absorption and a complete disappearance of pathology. As must be inferred from the preceding discussion and despite the undisputed value of the ray, its use is still empirical. There are three theories, one that the action is due to some effect on the blood, a second that it is a reflex nervous action, and the third that there is some hormone in the skin that becomes activated. Each has its advocates, but no one is generally accepted.

Granting the empiricism, the indications can still be clearly stated. Watson, of Tucson, suggests the following classification:

A. Extrapulmonary tuberculosis (so-called surgical)
   - Without pulmonary lesion.....Class 1
   - With pulmonary lesion .....Class 2

B. Pulmonary tuberculosis (infection of lungs and tracheo-bronchial glands)
   - Productive, childhood type, glandular, Class 3
   - adult type, lungs....Class 4
   - Exudative .....Class 5

Key

Class 1. Use light in all cases.

Class 2. Use light in all cases, but be careful to avoid reactions, and be especially careful in exposing the chest.

Class 3. Use light in all cases.

Class 4. Use light only in those cases which, in spite of the best hygienic-dietetic treatment, remain stationary or lose ground.

Class 5. Never use light.

Mayer, of Saranac, says that the best results are obtained in the so-called pre-tubercular child; tuberculosis of the lymph nodes, including the hilum and mesenteric glands; tuberculosis of the pleurae, bones, joints, peritoneum, intestines, skin, mouth, pharynx, larynx, and in corneal and phlyctenular ulcers. His results have not been so satisfactory in genito-urinary infections, but he comments on the rapid healing of old sinuses following nephrectomy.

The contra-indications are what Watson calls exudative pulmonary disease, that is, soft activity with fever, night sweats, rapid pulse, much cough, copious sputum, and cavity formation; also aged people with decompensating hearts or much arteriosclerosis; also individuals with toxic nephritis.

The technique and dosage may be discussed together. The light we use is the Alpine lamp with the quartz vacuum burner. The first exposure is for one minute only at a distance of thirty-six inches, and we approach even a mild erythema gradually, as a rule adding one minute each day, though we have no fixed rule in regard to distance or time of exposure, except the rule that under no circumstances must there be a definite burn. The sensitiveness of different skins or different parts of the body, such as the hand compared with the abdomen, are given due consideration, and general reactions are avoided. The use of actinic rays must never be accompanied or followed by a feeling of fatigue or malaise. We attempt to add one minute daily, and gradually bring the lamp closer, so that in about three weeks the exposures are from twenty minutes to half an hour with the lamp sixteen to eighteen inches from the body.

Since the opening of this clinic in December 1923, we have handled 230 cases of tuberculosis of one sort or another. Among these there were 156 cases of pulmonary tuberculosis; fourteen cases of abdominal tuberculosis, involving the intestines, mesenteric glands or peritoneum, one or several; thirty-six cases of tuberculosis of the bones or joints; of the bladder one; of the breast one; of the genito-urinary organs two; of the lymph nodes fourteen; of the kidney six; of the pharynx one; of the skin one; of the tonsils one; and of the thyroid three.

Most of these cases have come in for diagnosis only and it has not been possible to hold them for definitive treatment, so that we have been able to use the lamp on only eighteen separate individuals. Of these, fourteen were abdominal, six were involvements of the lymph-nodes of the neck, chest or mesentery, one or more; one of the kidney; and of these eleven also had, or had had, involvements of the lungs. Our results show that of all these cases one only failed to improve or recover. Four cases have been selected to report:

1.—Mrs. M. H., white female, age forty-two. The duration of the constipation or diarrhoea was about one year. In the spring of 1922 she developed a chronic diarrhoea with bloody stools, and later severe abdominal pain. There was some loss of weight, from about one hundred and ten to ninety-eight pounds. Her general condition became so poor and her weakness so great that a transfusion

was done during the early part of August. On August 22nd she was referred to us and a diagnosis of tuberculosis of the bowels was made, and the lamp advised. At this time her hemoglobin was thirty, and her weakness so great that she had to be brought to the office in a car and lifted to the table for treatment. In about two weeks there began to be definite improvement, with fewer bowel movements, and a decided gain in strength. In about six weeks the bowel movements were normal, her hemoglobin was seventy-six, and she was able to come to the office without assistance, using a street-car, and doing the necessary walking to and from the car. There was a gain of ten pounds in weight. The lamp was used fairly regularly until the following August, then discontinued. About five months later there was a mild diarrhoea and the lamp was again used for several months. Her present condition is excellent. She weighs 110½ pounds and does the cooking and dish washing, in fact, all the housework, for five people in a house with five rooms. In short, she is clinically well after a lapse of five years.

2.—Miss O. A., white female, age thirty-four. In July 1921 this patient was referred for the use of the lamp on account of tubercular adenitis of nine years' duration. There were numerous enlarged nodes, one very large, red and fluctuating, and two sinuses. She also had bilateral fibroid pulmonary disease. She was running a daily temperature of about 101. Her weight was ninety-six pounds. There was clinical and X-ray evidence of intestinal tuberculosis. Local response to treatment was very gradual. One sinus in particular responded very poorly, but after several months the sinuses were well, no enlarged glands could be seen nor felt, and there were no scars except at the sites of the sinuses. The improvement in her general condition was more prompt. In a few weeks her temperature was normal, and she weighed 122 pounds. There has been one return of the adenitis, possibly due to oral sepsis. At present her general condition is excellent. There are crackling rales scattered throughout the left lung and in the upper part of the right, but she feels tough and strong, and considers herself well six years after treatment was begun.

3.—Mrs. M. B. S., age thirty-seven, white female. This was a case of pulmonary tuberculosis of long standing that was doing very well until the spring of 1926 when she developed intestinal indigestion with pains in the intestines. There was no marked constipation nor diarrhoea, and no blood in the stools, but mucus was present from time to time. She lost considerable strength and developed a low grade fever. Examination of her abdomen showed a large, dense, irregular mass occupying almost the whole of the right abdomen, extending nearly to the umbilicus and apparently up under the ribs and into the pelvis. It was believed that this was tuberculosis of the omentum and mesentery. In March 1926 treatment with the ultra-violet ray was begun, and in two months' time her symptoms were entirely relieved. The mass had melted away so that it was hardly palpable. Treatment was continued and in July examination of the abdomen failed to show the presence of any mass that could be felt except with great difficulty. Her clinical condition was excellent.

It is noted in the record that in December 1926, a pelvic examination showed pathology that might possibly be tuberculous. She has not been in for examination since this time, but has been seen about the street frequently, and is apparently well.

4.—Mr. R. V. G., white male, age twenty-eight. This patient had led rather a checkered career with pulmonary tuberculosis and abdominal symptoms. In the fall of 1918, on account of weakness, fatiguability and abdominal pain, the diagnosis of chronic appendicitis was made and the appendix removed. This did not relieve the abdominal symptoms, and a few weeks after the operation alternating spells of constipation and diarrhoea developed. In June 1920, he was treated for ulcer of the stomach but made no improvement. In September 1920, a diagnosis of spastic colitis was made, but there was no improvement under treatment. In January 1921, he first came to us, the diagnosis of intestinal tuberculosis was made, and he was sent to Mount Regis Sanatorium. There was little or no improvement and a laparotomy was decided upon. In March 1921, the abdomen was opened and inoperable tuberculosis involving chiefly the cecum, ascending and transverse colon and the mesentery glands of the peritoneum was found. The abdomen was closed without drainage.

Nine weeks later his condition had become

so much worse that death seemed inevitable. His bowels moved twelve to fourteen times a day; the pain was so great that morphine had to be used several times daily. There were nausea and vomiting and great emaciation. The use of the lamp with this case was our first experience with this method of treatment. About eight days after the lamp was begun there began to be improvement, with fewer stools, less pain, and a cessation of the nausea and vomiting. Two weeks from the time the lamp was first started he was moved from the hospital to his home. His improvement from then on was uninterrupted, and in the course of several months there was a gain in weight of thirty-eight pounds, and a complete cessation of all abdominal symptoms. He is at present living and symptomatically well six years after the beginning of treatment with the ultra-violet ray. It is not believed that the course of the pulmonary involvement was affected in any way except to the extent that curing the involvement of the bowel, mesenteric glands, and peritoneum, has enabled him more successfully to combat the pulmonary disease.

NOTE:—Since this paper was written, experiments on living animals show that the penetrating power of the ultra-violet ray is deeper than was formerly believed, so much so that with rabbits it may extend through the skin and other tissues into the abdominal cavity.

McGuire Clinic.

THE RELATIVE FREQUENCY OF THE VARIOUS ABNORMAL POSITIONS OF THE VERMIFORM APPENDIX AND THE DIRECT BEARING ON APPENDICEAL MORTALITY.*

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A great deal has been written concerning the normal position of cecum and appendix with reference to its subsequent pathology, but on a perusal of the literature little can be found concerning the abnormal location of the organ and its relation to the increased surgical mortality in appendicitis. Notwithstanding the excellent work that has been done in reducing the mortality of appendicitis, the fact remains that we have a very high mortality from the disease.

The author of this paper will not attempt to go into the normal case of appendicitis, as we are all familiar with that condition, but he will attempt to refresh our minds on the abnormal cases that are usually the baffling ones.

When one bears in mind the fact that an appendicular abscess is usually located at the sight of the appendix, though frequently the pus will escape into the numerous folds and crevasses of the abdominal cavity, one must be aware of the frequency of abnormal cases in order to recognize the condition. The position of the abscess is most likely to be determined by the position of the appendix and the surrounding fold of the peritoneum. In order to appreciate more fully the abnormal positions of appendix, it will be better first to describe the various normal positions in which the cecum and appendix are found. Gladstone and Wakely, in an analysis of three thousand cases, found the various locations of the appendix as per the following table:

	Position of the Appendix	No of Cases	Per Cent
1.	Anterior or pre-ileal	27	0.9
2.	Splenic or post-ileal	15	0.5
3.	"Pelvic": on psoas muscle, near or hanging over the rim of pelvis	825	27.5
4.	Sub-cecal, beneath the caput ceci	56	1.86
5.	Post-cecal and retrocolic	2076	69.2
6.	Ectopic	1	0.033

From perusal of the literature and textbook description of appendicitis, diagnosis should be simple, but when one sees the number of cases having had any number of abdominal operations, usually the first one being appendectomy, unrelieved of their symptoms, all of must admit that the diagnosis of appendicitis is a difficult problem, especially in the so-called chronic appendix cases.

I do not belong to the school that claims there is no such diagnosis, but I do emphatically state that one is only justified in making such a diagnosis after he has eliminated the genito-urinary tract, various forms of spinal disease, intestinal parasites, syphilis, tuberculosis of the peritoneal cavity, gall-bladder and stomach, tabes, various gynecological conditions, typhoid, come conditions of the chest, etc. Epididymitis can very easily be confused. In other words, if one has eliminated everything else, chronic appendix is permissible, and in these cases a kind benevolent pathologist will find a few chronic changes to ease you over.

*Read before the Warwick County Medical Society, at Newport News, Va., November 14, 1927.

Appendicitis in children is not as infrequent as one would think, and requires a very skilful study, as we are aware of the high mortality it carries.

Morris Cohen reports, out of 367 children admitted to Lebanon with acute surgical abdomen, 354 were diagnosed acute appendicitis before admission. Out of 327 operated upon, 312 showed inflammation of appendix. The remaining showed—pyelitis, three; mesenteric lymphadenitis, six; mesenteric node, one; primary acute diffuse peritonitis, three; torsion of ovarian cyst, one; torsion of omentum, one. The twenty-seven not operated improved or cleared up. He reports 19 per cent mortality in children four years and under.

One must remember that when you have pathology of the appendix that you also have extension of pathology in other organs. The unusual types of appendicitis, for sake of discussion, may be classed as follows:

1. Anatomical displacement.
2. Pathological displacement.
3. Those cases displaced by pressure from other enlarged organs, as pregnancy, tumors, etc.
4. Congenital mal-positions.
5. Those cases associated with other inflammatory processes and temporarily overshadowed by them. Of course, other conditions too numerous to mention here may be added, but I think these are sufficient to express the thought the author has in mind. It is a very comforting feeling one has at times, and frequently very humiliating at others, when one has explored the gall-bladder tract for supposed pathology, the stomach and duodenum for ulcer, pancreas, spleen, etc., without showing sufficient pathology to explain the symptoms complained or find a diseased appendix, sufficient to explain the symptoms for which one operated.

It is an experience of every surgeon to have the upper abdominal symptoms relieved after removal of an appendix showing little pathology.

Discussion of Classification

1. Anatomical Displacements.—The appendix, being a decidual type of organ, hooked up, as it is, to a long tortuous tube at the junction of larger to the smaller portion, is more or less free to enjoy a wide range of latitude as well as liable to become infected, due to its position, as it predisposes to fecal stasis and irritation. The normal caecum is really a cesspool, teeming with various bacteria.

Quoting Gray, "In unusual cases the appendix is found in the inguinal canal as a portion of or the sole contents of a hernia. Adherent to parallel peritoneum in front of or the side of caecum, adherent to the under surface of caecum and in contact to its muscular wall, and covered by its peritoneal coat; when the caecum is mobile, the appendix may be found almost anywhere in the abdomen. When the caecum is undescended, the appendix shows in its failure to descend and may be below the gall-bladder or in front of the right kidney and may pass in several directions—upward behind caecum, to the left behind ileum and mesentery, or downward and into the pelvis. It is certainly the experience of the writer that the appendix may be found most anywhere in the abdomen, and at times simulate most any intra- as well as extra-peritoneal condition.

2. Pathological Displacements.—The majority of these abdominal locations are due to inflammation in adjacent organs, extending to or involving the appendix, and, in the stage of restoration, adhesions pull the appendix to its new bed; as examples,—pelvic inflammatory conditions, various forms of nephritis pathology, acute upper abdominal conditions, strangulated hernia, etc.

3. Those cases displaced by pressure from enlarged, or pathology in, adjacent organs, the most frequent probably being pregnancy, large fibroids, cysts, hernia, enlarged kidney or spleen, etc. In general visceroptosis, the appendix enters in the general descent.

Appendicitis in pregnancy occurs most frequently during the first six months, rarely later. Usually you have a history of previous attacks. They run a rapid course. The leucocyte count is not of much help on account of the increased normal leucocyte count in pregnancy. These cases usually do very well, even if you have to drain. Very few abort.

There are various mal-positions of the appendix, too numerous to mention here, but a few will be recalled. One finds in the literature cases of complete abrasure of the appendix, transposed appendix, undescended, partial or complete, Jackson membrane, and extraperitoneal cases. The latter show high per cent of blood and pus in urine; also, pain in

back and genital organs is more severe in this type of case.

Cases associated with other inflammatory processes and being temporarily overshadowed by them occasionally show acute pathology in the appendix; less frequently the condition is simply a secondary extension. The former applies to acute gall-bladder pathology, gastric or duodenal ulcer, ruptured or otherwise, mesenteric adenitis, etc.; the latter is found more frequently in pelvic conditions. One should bear in mind that acute pathology in the appendix gives septic pathology in other organs as well.

Regardless of the location of a diseased appendix, one usually finds the characteristic symptoms, and, in addition, symptoms of involvement of the organ or organs with which the diseased appendix is in close proximity; however, the latter might, and frequently does, overshadow the appendix.

The cardinal symptoms, with relative frequency, are, regardless of its positions, about as follows:

1. Pain, 100 per cent; 2. Nausea, 35 to 44 per cent; 3. Local tenderness, 89 per cent; 4. Increased tension, 25 to 43 per cent; 5. Rigidity, 40 to 65 per cent; 6. Increased temperature, 68 to 84 per cent; 7. Increased pulse, 44 to 84 per cent; 8. Increased polys., 90 per cent; leucocytosis, 79 to 95 per cent. Sorisi test is a very reliable symptom and its relative frequency has been variously estimated; in my experience, it has proved a very valuable sign, especially in normally located diseased appendices, but it is necessary to pull vigorously to be positive.

As to the treatment of appendicitis, all of us know how to do an appendectomy but the present mortality is sufficient to show that we have not as yet mastered its cure, as too frequently comparatively mild cases die. In acute non-suppurative cases with early operation, splinting the bowel before and after operation with morphine, forced fluids, etc., they should all get well, barring uncontrollable complications. In suppurative cases with increased spreading of infection, it is better to do a simple drainage unless the appendix comes up easily and can be removed without difficulty. In cases where there is a tendency towards localization, the best policy is to wait and use supportive treatment.

Appendicitis with pregnancy does not tend to localization, with abscess formation, but, instead, there is an increased spreading, with diffuse general peritonitis resulting. In this type of case, do drainage with or without appendectomy. A cecostomy, inserting a small catheter in the appendix opening, will relieve distention, drain the bowel, and serve as an avenue through which fluids may be introduced. A very small per cent of these cases will abort. These cases, as all surgical cases, should be handled very carefully, moved as little as possible, fluids forced through every avenue, elimination promoted, and support them. Not a little of our mortality is due to the lack of proper surgical judgment, indecision, lack of knowledge of various abnormal locations of appendix, haste, crudeness, and roughness in tearing of tissues, and to medical treatment in general.

DIETARY DEFICIENCY DISORDERS.*

By H. W. PHILLIPS, M. D., Norfolk, Va.

Modern medicine is rapidly undergoing important changes in the direction of disease prevention, and certain dietary requirements are necessary for the prevention of a wide range of conditions of ill health.

The food principles, carbo-hydrates, fats, proteins and minerals, cannot be built into body tissues without vitamins. The word vitamin was introduced into physiologic literature through Funk's studies on pigeons, following up the pioneer investigations of Dutch scientists, Eijkman and Grijns.

The story of the abnormal behavior of pigeons kept on a diet of polished rice and their astounding recoveries when small amounts of certain supplementary foods are added to the ration, has become classic.

The vitamin itself is yet undiscovered, its chemistry unknown, its deficiency pathology syndrome (avitaminosis) not properly understood. Yet the effects of vitamin-deficiency and vitamin-feeding, in extensive animal experimentation, is accurate and definite and the results dependable.

Among the diseases prevented wholly or in part by vitamin-feeding are xerophthalmia, polyneuritis (beri-beri), scurvy, rickets, sterility, caries of teeth, and anemias.

Xerophthalmia, or that condition of the eyes which shows an atrophic conjunctivitis with

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keratitis and tendency to ulceration, occasioned by vitamin A deficiency, can be promptly relieved by feeding the patient a diet rich in vitamin A, a fat soluble vitamin that is found in cod liver oil, eggs, milk, cabbage, lettuce, carrots, and tomatoes.

Minimized cellular activity and lowered resistance to infection are also results of vitamin A deficiency.

Polyneuritis (beri-beri) and such disorders as malnutrition, loss of appetite and digestive disturbance, are the result of vitamin B deficiency, and recovery follows the use of food containing vitamin B, a water soluble vitamin, which is anti-neuritic. Vitamin B is found in yeast, wheat germ, leafy vegetables, and fruit juices.

In the Russo-Japanese war beri-beri was a veritable scourge, whereas there were limited serious outbreaks of typhoid, typhus, scorbutus, and dysentery.

Scorbutus (scurvy) is caused by deficiency of vitamin C. Recovery follows feeding the scurvy patient an anti-scorbutic diet, that is, one containing the water soluble vitamin C, such as fresh fruit, vegetables, tomatoes, and glandular organs. Armies, Polar expeditions, and mariners at sea suffered from outbreaks of this disease due to lack of vegetables and fruits. Prophylaxis depends upon daily feedings of fruit and vegetables. In infant feeding it is best to use the milk from the herd that grazes upon green grasses, as there we have our greatest source of vitamin C, ensilage being the principal source of vitamin C in stable fed cows. Olson and Copland and many others are of the opinion that vitamin C in milk has its origin in the feed of the cow. Hess and Unger, in 1919, and Dutcher, in 1920, concluded that cows that are fed vitman rich ration yield vitamin rich milk. To the contrary, Hughes, Fitch, Cave and Riddell report recently that vitamin C content of cow's ration has little, if any, influence on vitamin C content of the milk,—yet it is probable the animal body does not synthetize this vitamin.

Rachitis (rickets) with its osseous changes, and *spasmophilia* are conditions brought about as a result of vitamin D deficiency, and it is only necessary to feed the patient the antirachitic oil soluble vitamin D, which is found chiefly in cod liver oil. Vitamin D is specifically related to phosphorus and calcium metabolism. Vitamin D is not produced within the living body of man. It is necessary to supply it through the ingestion of antirachitic food, or through exposure of the skin to sunlight or ultra-violet rays.

The short ultra-violet rays (below 313 millimicrons) activate the sterols, and at the present time it would seem as if ergosterol is the substance acted on in the superficial tissues by these rays. Ergosterol is the parent (precursor) substance from which vitamin D is formed. It is possible that the activity of cholesterol, produced by irradiation, is due to the presence of ergosterol. Tests with irridiated ergosterol have been astounding. A daily dose of 0.0001 mg. of irradiated ergosterol has cured and prevented rickets in rats kept on a rachitogenic diet. Irradiated ergosterol is the most potent antirachitic substance known, 5 mg. being equivalent to approximately 1 liter of a good cod liver oil. It has been found that vitamin D as it is secured in the irradiated sterols can be absorbed from the uninjured skin. Thus, therapy by inunction is presented.

Sterility is caused by vitamin E deficiency and the antisterility vitamins consist of lettuce, and embryo of wheat and other grains. Evans and Bishop reported a detailed study in which they found that female rats became pregnant but resorption of the young resulted from lack of vitamin E. Evans later reported that sterility occurs also in male rats. Evans and Bishop demonstrated that wheat germ oil, the highest and least varying source of vitamin E known, prevented the death and resorption of the young.

It also protects the males against degeneration of the germinal epithelium. Through appropriate experiments they eliminated the lack of vitamins A, B, C, and D as factors influencing the resorption of the young. Mason reports a detailed study on the degeneration of the testes in rats on a sterility diet.

In vitamin E we have a substance specifically related to iron assimilation in a manner comparable to the relation of vitamin D to phosphorus and calcium metabolism. It is interesting to know whether each of the other mineral elements has a companion substance (vitamin) which must accompany it in order that physiologic utilization may be possible.

Von Jaksch's Disease. This is probably a secondary anemia whose contributing factors are prematurity, twins, improper feeding, and wasting diseases. Bunge has shown that infants are born with a reserve supply of iron stored in the liver, and this reserve is chiefly

stored in the last three months of intra-uterine life, that is to say, premature babies are born with an iron deficiency. This disease, occurring usually in children under two years of age, has been found to respond to supplemental feedings of egg yolk (early as 2 mo.), prune sauce and spinach (early as 6 mo.), liver pulp and scraped beef with saccharated carbonate of iron in 5 gr. doses t. i. d. (early as 1 year.)

Pernicous Anemia. The response to liver feeding in this condition is prompt and most gratifying. Investigators believe that vitamin E, which is specifically related to the assimilation of iron, is responsible for the result, since liver is rich in iron and vitamin E. On this basis, the use of iron citrate and a fat having the properties of wheat germ oil (a potent source of vitamin E) is suggested as a logical basis for the treatment of anemias. The following are some of the findings of Minot and Murphy in the treatment of pernicious anemia with a diet rich in liver: The earliest response to feeding liver on the part of the red blood cells is the appearance of a temporary, often marked increase of reticulocytes. This sign is rarely absent and then only under special circumstances. The increase of reticulocytes occurs within a few days and before there is a definite rise in number of red blood cells. It is not rare to see a blood count increase from one million to three million per cubic millimeter within three weeks. The rise in red blood corpuscles outstrips the accompanying rise in hemoglobin. The formed blood elements of the bone marrow also increase, the white blood cells sometimes to above normal, with an increased percentage of bone marrow leukocytes. The blood platelets co-incidentally increase to normal or sometimes above. Within a few weeks the eosinophiles increase to beyond 20 per cent and persist for many weeks. The excess bile pigment in the plasma, often within three weeks, shows an icterus index less than commonly observed in normal persons. Forty-four per cent (44%) of those who follow diet properly have a count of 5,000,000 and some reach as high as 6,500,000. Infection or other complications may account for low level in red blood cells in patients who are properly liver fed.

Multiple transfusions sometimes prevent the usual response to liver feeding, but, as a rule, the response is prompt in cases of previous transfusions. Two hundred grams of liver daily is followed by a quicker response than 100 grams, though improvement follows this amount.

General improvement is noted early, and is definite within ten days when the reticulocytes have reached the peak of their rise; also, within ten days, the lemon color of the patient decreases and the pink flush of the cheeks and fingers appears. Appetite improves and at times becomes ravenous. The tongue becomes normal, and the pain of rawness in the esophagus subsides. As the red blood corpuscles increase, the symptoms of anemia diminish and vanish when the count approaches normal. Thus, dyspnoea, edema, palpitation, weakness, irritability, cramps in the muscles and the like, diminish rapidly. Fever, when present, disappears within ten days.

Pellagra, goiter, hypopituitarism and other endocrine deficiency disorders deserve more than casual mention but time will not permit. However, I must make some reference to the hypophysis cerebri which, when attention was first called to it, was dismissed contemptuously as a vestigial organ to which no consideration was due. Later it became known to be associated with Marie's disease, and today we are acquainted with its function as regards skeletal growth, sex changes, etc., but, not the least important, it has furnished us with medicinal remedies that are indispensable in our armamentarium of therapeutic agents—pituitrin of the posterior lobe for obstetrical and surgical use, and the powdered extract of the whole gland which, when fed the hypopituitary case, gives certain relief. The pituitary headache is instantly relieved.

Here I would like to report a case, one of a half dozen I have had within the last few months: Mr. H., age 33, clerk for eight years, suffered off and on with intense bitemporal and suboccipital headache. No relief was found from any of the treatments he had taken. Specialists were consulted and surgical drainage of sinuses resorted to without relief. At last he was advised to go to Johns Hopkins for observation, with suspicion of a brain tumor. With this history he came to me last January, complaining of severe and constant headache between the temples and in the back of his head. He had numbness of whole of right side of body and right side of tongue, as if paralayzed. He was grouchy in his home and inefficient in his business. He expressed himself as knowing I was not of the specialty he should consult, that he belonged to the

head specialist, but thought he would like to see me before going to Baltimore, as I had been his family physician for the past several years, though I had never met him.

I put him on pituitary extract tablets (Armour) gr. 1 t.i.d. I told him at the time that if he did not get prompt relief I, too, was of the opinion he should go to Baltimore, since he appeared so dejected and seemed suffering such intense pain. The first dose was taken in the evening. He awoke the next morning entirely relieved and feeling like a two year old, as he expressed it. He has not felt the least return of his headache or numbness since—now ten months ago. He takes a fragment of a tablet once daily. B. W. and Co. within the past few months are putting out pituitary tablets in one-tenth grain size.

Another case is a girl of fifteen who has suffered constantly for the past several years with bitemporal headache, and who had undergone sinus operation two years ago without relief. She was put on pituitary extract tablets (Armour) grains 1 t.i.d. with immediate relief. She is now taking pituitary extract tablets gr. 1/10 (B. W. Co.) once daily and has had no return of the headache since last August.

405 *Medical Arts Building.*

CHRONIC LEAD POISONING.*

By WILLIAM A. SHEPHERD, A. B., M. D., F. A. C. P.,
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Numerous factors contribute to make the subject of chronic lead poisoning one of more than passing interest. It has been said that when one cannot explain a curious train of symptoms, always suspect the presence of syphilis, hysteria, or lead poisoning. Our standard text books all state that the condition is one of frequent occurrence and all of us, perhaps, recall from our student days the reference to the blue line on the gums as one of the more or less constant characteristic signs of the disease. Yet in a long experience, teaching in the dispensary and at the bedside, I have never had an opportunity to demonstrate this to students. Records of our largest local hospital, complete since 1915, and including some 50,000 patients, do not list a single case of chronic lead poisoning.

So variable and often so unusual are its manifestations that it is easy to infer that the lack of recorded cases of this disease is probably not so much due to its rarity in our community as to our failure to recognize it. If it is rare, then certainly its rarity is surprising, in view of the undoubted susceptibility of many individuals to the poison, the widespread use of the metal in one form or another, the more or less daily and intimate contact with it, and especially in view of the fact that very small quantities may at times suffice to produce symptoms. This is an industrial age; many industries employ lead in one form or another, and it is reasonable to expect that manifestations, either immediate or remote, of the damaging action of the metal should appear amongst the workers in such industries.

My own interest in the subject was awakened by a case occurring in my practice last January. This patient's symptoms were confined almost entirely to the gastro-intestinal system and could very well have been explained on the basis of peptic ulcer, cholecystitis, gallstones, or appendicitis. Leathers and Morgan report a case in which the same observation holds good. I desire to present here the record of my case.

This patient, Mr. L. J. M., was seen January 21, 1927; age forty-eight, an electrician; for the past three years has worked in a battery manufacturing plant. Married and has six healthy children. Wife has had no miscarriages.

For the past three weeks he has had what he describes as cramps in the right lower quadrant of his abdomen, also in the right hypochondrium, and at times a generalized aching of the abdomen. He is sometimes constipated for four or five days, also during the last few weeks he has been conscious of his heart's action. He thinks his kidneys are over-active, that he passes "lots" of water during the day and has had night voiding for the past month. In 1917 he was told that he had sugar in his urine. This cleared up in two weeks and he did not have a re-appearance of it. The last negative urine examination was six months ago. He has had several attacks of high temperature and aching in the past, the cause of these attacks unknown to him. He also has at present some aching in his legs; has had tonsillitis five or six times. All of his teeth were drawn last month.

Patient is of slender build, height five feet, seven inches, weight one hundred, twenty-six pounds, sallow complexion, stooping posture,

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slow in his movements and speech, mentally sluggish.

The points of interest in his physical examination are:

1. Dark purple spots in gums at points where teeth were recently drawn.
2. Tenderness right hypochondrium and right iliac; also along the direction of the descending colon.
3. Heart rate 92; otherwise negative.
4. Sluggish patella reflex both legs, other reflexes negative.
5. No palsy or wrist drop; no tremor; no tenderness along the musculo-spiral, anterior tibial or popliteal.

X-ray examination indicates adhesions around the gall-bladder resulting in distortion. No evidence of duodenal ulcer, or calculi. There is general delay in intestinal motility, appendix contains foreign matter at its tip and is relatively narrow toward base.

Blood

R. B. C.—3,570,000
Hb.—70 per cent
W. B. C.—12,100
P.—66
L.—29
M.—5.
Numerous stipple cells; slight anisocytosis.
Wassermann is negative.

Urine negative—except for presence of lead, in considerable quantities as shown by concentrating 500 c.c.

It was felt that the symptoms in this case were probably due chiefly to the chronic lead poisoning rather than to pathology of the gall-bladder or the appendix. Patient was put on ten grain doses of potassium iodide three times daily with morning purge of magnesium sulphate and told to discontinue working in a battery factory. He did not carry out the latter instruction but reported at the end of ten days that he had been more careful as to his hands and had been taking the iodide and salts, regularly, and had been free from symptoms for three days. Examination of his urine at this time failed to reveal lead. Seen one month later he was still free from symptoms. In his work he is accustomed to handling red oxide of lead in making the positive plates of a battery and also lead sulphate used in forming the negative plates. Besides this he is exposed to the fumes arising from "burning on" the lead terminal of a battery. This latter exposure he has avoided during the period of treatment. It is interesting that he was exposed for three years before showing symptoms. Osler refers to a case of a man who had been a lead worker for fifty-two years, before developing symptoms.

Authorities agree that the respiratory tract is the most important point of entry; next the gastro-intestinal, and lastly the skin. In connection with the subject of entry through the respiratory system, there is evidence that the fumes created by the burning of lead, as in battery manufacture, are *not* a source of danger. Apparently, air becomes poisonous only through particles of dust bearing soluble salts of lead. J. P. Leake showed that in the dust of garages, lead may constitute as much as 1 per cent of the inorganic matter, and that workers in such places had more than the normal amount of lead in their stools and definite changes in their blood. Some of the industries showing lead in the dust of their premises are, in order of incidence:

1. Cracker and cake factory
2. Underwear factory
3. Shirt and overall factory
4. Machine and shop factory (brass)
5. Retail grocery
6. Cigar factory
7. Dairy
8. Machine shop (iron and steel)
9. Wooden heel factory
10. Tailoring and pressing shop
11. Mail bag factory
12. Ice cream factory.

The well known poisonous effect of the air in the neighborhood of lead ore smelting furnaces is, for the most part, due to inhalation of particles of lead carbonate in the air rather than to the vapors arising from the heated lead.

The occupations into which lead enters as a hazard are almost innumerable. In addition to those in which lead products are handled with known hazards may be mentioned employees in enamel factories, sailors, structural iron workers, ship builders (of local interest), printers, and those engaged in the manufacture of lead storage batteries.

Lanza, in discussing a paper by Leathers and Morgan, brought out the point that lead poisoning is frequent, not so much in lead and paint plants where the hazard is recognized and precautions taken against it, as in those plants where the use of lead is incidental to

the main process. In one instance cited by him, two hundred men were engaged in lead soldering in one part of a building. The fumes passed from this room to another group amongst whom no precautions were being taken. In this latter group the disability from gastro-intestinal troubles was four times as great as from respiratory troubles. These men consulted their family physicians and yet not one case of lead poisoning was certified to the health authorities or reported on an insurance certificate. Lead poisoning had been occurring in this plant for a number of years. It is remarked that these facts may indicate how widespread and unrecognized lead poisoning may be in some communities.

Lead in drinking water, resulting from the use of lead pipes, is by no means negligible. During this year, Hoffman has reported deaths from lead poisoning in rural districts of New England, resulting from lead-dissolving waters in rural water conducted through lead pipes. Three cases have been recently reported on one farm where the water contained only four parts per million. Cosmetics, hair dyes, false teeth, lead and opium pills, diachylon ointment, acid wines and ciders have all, at times, been positively incriminated. The definitely toxic action of lead on the blood and on the kidneys is very interestingly demonstrated by the effects of colloidal lead lately injected for the cure of cancerous tumors. Ullman reports that the poisonous effects of such injections come on at times acutely, in two instances requiring transfusion. In three cases, the hemoglobin fell 50 to 70 points; the red blood cells dropped one-half, following the injection of 90 mg. of colloidal lead. Stippling of the red cells was constant. Acute nephritis was also practically constant.

As has been intimated, the symptoms of lead poisoning are manifold and, in addition to the much emphaized colic occurring in 75 per cent, and blue lines on the gums in 90 per cent, may consist of pallor, giddiness, palpitation, dyspnoea, transient headaches, constipation alternating with diarrhoea, pains in the joints, motor weaknesses, especially wrist drop, tremors, paresthesias, mental symptoms, and even convulsions and hallucinations. The best check on the diagnosis is found in the stippling of the red cells. This is practically constant and bears the same relation to lead poisoning as the Wassermann does to syphilis. It occurs, of course, in other conditions where the question of lead is not an issue, and may also be found in lead workers without other symptoms. Leake states that more than twenty stipple cells per hundred thousand should be considered as indicating danger. In my experience, the stippling of red cells is best brought out by employing a smear stained with one of the methylene blue blood stains, such as Wright's or Hasting's, rather than with hematoxylin. The specimen is treated as for the ordinary differential count. The rather deep bluish spots will appear sharply when the red cell is in sharp focus, and will be seen to be uniform in size in a given cell, though in different cells the size may vary. They are generally even distributed throughout the cell but may be somewhat thicker at the rim. The cytoplasm, whether by contrast or not, seems to be paler than that of neighboring cells. (I have a slide from a case of chronic lead poisoning under the microscope which will illustrate the points I have made concerning stippling.) As a further check on the diagnosis, the demonstration of lead in the urine may very properly be undertaken. This is accomplished by collecting 500 c.c. of urine, acidifying with 70 c.c. of sulphuric acid, decolorized by slowly adding 20 gms. of potassium persulphate evaporated by boiling to one-half original volume and diluted with equal volume of alcohol. The insoluble sulphate precipitates in 5 to 6 hours. This is collected on filter paper and washed off with 10 c.c. distilled water. Wash water is clarified by adding crystals of sodium acetate.

This now contains all the lead in 500 c.c. as acetate and may be precipitated as lead sulphide by sulphuretted hydrogen, producing a yellowish brown discoloration, the intensity varying with the amount of lead.

Potassium iodide is spoken of as setting lead free from the tissues and it is stated that lead may not be found in the urine until this drug is administered. This was true in the case reported to you to night and the specimen in the test tube was obtained from 500 c.c. of urine of this patient, treated as I have outlined, following three days' administration of ten grains of the drug three times a day. Aside from the more or less obvious preventive measures where there is frank exposure, this drug constitutes the best treatment. Morphine and not purgatives should be given for the colic and, contrary to the usual action of this drug, will often be found to move instead of constipate

the bowels, due, no doubt, to relief of the intestinal irritation and spasm.

206 *West Grace Street.*

DIGITALIS THERAPY.*

By F. C. RINKER, M. D., Norfolk, Va.

Our present knowledge of the use of digitalis in disease is the result of experiments on man by MacKenzie and Einthoven. They used the sphygmocardiogram and electrocardiogram in determining the results of digitalis on the circulation.

Digitalis is employed, in medicine and surgery, in order to slow the rate of and strengthen the heart muscle and through this medium to effect the general circulation.

Before considering the more important conditions in which digitalis in indicated, let us first discuss for a moment the *dosage* of the drug.

Eggleston published a method of calculating the dose of digitalis for a given body weight in 1915. He found that the average amount required to digitalize the human heart is 0.0146 times the number of pounds of body weight expressed in grains. This is equivalent to 9/40 grain of powdered leaf or 2½ minims of the tincture per pound.

Having determined the amount of the drug necessary for a case of known weight, there are two methods of administration open for election; first, the quick or large dose method; and second, the slow or small dose method.

The first method is desirable in severe cases of cardiac decompensation and in the serious infections, such as pneumonia. It is important that these cases should be under hospital observation where they can be seen frequently on account of the possible onset of untoward symptoms of digitalis poisoning. The writer prefers to give the desired amount of digitalis in twenty-four to forty-eight hours, giving the drug at six hour intervals in equal quantities. Following the completion of this medication, no digitalis should be given for forty-eight hours. At this time, if the desired cardiac result has not been accomplished, small doses may be started at four hour intervals and continued for some time with safety.

The second, or small dose method, is advisable in all ambulatory cases and may be used in all of those cases not requiring rapid digitalization. By this method, one may gradually digitalize a heart over a period of days or even weeks, using a few minims of the tincture or one-half to one grain of the powdered leaf at a dose three or four times daily.

Probably one of the greatest fallacies in digitalis medication is the mistake, so frequently made, of prescribing that the drug be given in drop instead of minim doses. Drops are inaccurate according to the size of the pipette and the conditions of the surrounding atmosphere. I have seen droppers that would require 100 to 325 drops to equal one dram. Thus when prescribing digitalis, we should always order that it be measured either in a graduated pipette or in a minim measure.

A fresh preparation of digitalis is also of importance; hence we are advised by pharmacologists against using a drug that has been allowed to deteriorate by age or by being exposed to the air for a long time. The tinctures are now dispensed in one ounce hermetically sealed bottles in order that the drug may be prevented from losing potency before it has been used.

Digitalis may be administered by mouth, by hypodermic injection, and by rectum. If given in sufficient dosage, it will act equally and efficiently by either method. Pardee, Robertson and Eggleston have proven by electrocardiographic studies that digitalis effect begins in from one and one-half to five hours after it is administered. Should a quicker effect than this be desired it is advisable to give strophanthin intravenously. Levine, Cunningham, Cohn, Levy, Clarke and others, report serious toxic results from the use of digitalis given intravenously and all recommend the use of strophanthin or ouabain when this route of administration is necessary.

One should be always on the lookout for signs of overdosage. These may be divided into two groups. First, those related by the patient as follows: Nausea, vomiting, diarrhea, heart consciousness with or without the sensation of "skipping", headache, dizziness and disturbances of vision. It should be remembered that the nausea may be due to something other than the effect of digitalis on the heart or vomiting center. Thus this one symptom alone should not be held as a criterion for discontinuing the drug.

Second, those signs as determined by phy-

*Read before the Seaboard Medical Association of Virginia and North Carolina in Norfolk, Va., December, 1927.

sical and electrocardiographic examinations, which are:

1. A sudden reduction in pulse rate, resulting from overaction in the sinus node.

2. The onset of extra-systoles due to overaction of the drug on the auriculo-ventricular conduction tissues causing an increase in the P-R interval resulting in partial or complete heart block.

3. Over-excitability of the auricular or ventricular tissues may cause extra-systoles or the T-wave may become inverted in one or more leads of the electrocardiogram.

Let us now consider the effects of digitalis on some of the specific cardiac diseases.

Auricular fibrillation is more dramatically relieved by digitalis than is any other condition. In this disease there is an irregularity between auricular and ventricular systole. The auricles are in fibrillation and these minor stimuli being "shunted" from one portion of the auricular tissue to another keep up a constant irritation to the ventricular tissues, thereby increasing the ventricular rate in an irregular way. Digitalis is used to bring about a restraining influence of ventricular action by reducing the number of impulses passing through the connecting tissues (the auriculo-ventricular bundle). This produces partial heart-block and allows for longer rest periods to the ventricles, at the same time aiding coronary circulation, which is at its best during diastole. The drug should be used in these cases in massive amounts but it should be greatly reduced or stopped when the ventricular rate reaches between seventy and sixty beats per minute.

In auricular flutter, digitalis acts by cutting out some of the impulses going to the ventricles and will frequently bring on auricular fibrillation before the condition has been brought back to normal.

Cardiac decompensation without flutter or fibrillation is, in the opinion of the writer, usually benefited by using digitalis. There exists, however, considerable difference of opinion as to the value of the drug in these cases. Cohn, Levy, Mackenzie, and Pratt believe that it is of little aid, while Rupe, Christian, Pardee and McCulloch advise its use. In many cases digitalis rarely affects the cardiac rate but in most of them there is decided improvement in signs and symptoms after digitalis therapy is well under way.

In paroxysmal cardiac tachycardia, in which the impulses have their origin in the sino-auricular node or auricular tissues, digitalis is of inestimable value. On the other hand, in cases of ventricular tachycardia, in which the beats originate in the ventricular tissues, the drug is of no value and may aggravate the condition.

Premature contractions may be caused by digitalis but they do occur in hearts which have not received the drug and, of these cases, some will be relieved by administering it.

In cases of heart block and sinus block digitalis should not be used.

There are certain conditions met with in medicine which should receive digitalis, because of needed cardiac support, in order to cope with severe toxemia. The more important of these diseases are pneumonia, diphtheria, sepsis, pulmonary edema, etc.

Lastly, digitalis has an important place in surgery in furnishing strength and support to hearts which have suffered from the shock of operative procedure. With this in mind it is earnestly urged that more cases being prepared for surgery be digitalized beforehand.

Sarah Leigh Clinic.

HEADACHES OF NASAL ORIGIN.*

By HERBERT R. ETHERIDGE, M. D., Norfolk, Va.

There are four conditions in the nose which, according to Greene, may cause headaches:

1st—Acute inflamamtion of the nose or sinuses.

2nd—Chronic inflammation of the nose or sinuses.

3rd—Anatomic variations causing pressure.

4th—New growths of the nose and accessory sinuses.

In order to better understand the distribution of pain in nasal conditions, it is well to briefly review the sensory nerve supply of the nose. The sensory nerve supply of the nose is derived from the first and second divisions of the trigeminus. The anterior ethmoid, a branch of the first division, supplies the upper anterior part of the nasal chamber and sends fibers to some of the ethmoid sinuses and frontal sinuses. The remainder of the surface of the nose and accessory sinuses is supplied through the spheno-palatine (Meckel's) ganglion from the second division. Motor and

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sympathetic fibers also pass through Meckel's ganglion from the vidian nerve which is made up of fibers from the great superficial and the deep petrosal nerves. Sensory fibers also go to the orbit, palate, naso-pharynx, tonsil and tongue.

Pain in acute or chronic sinusitis may be due to toxic or to mechanical causes, or to both, but is best explained by pressure upon the sensory nerves.

The pressure may be due to swollen tissue or to a collection of pus in the sinuses, or to both. It seems unnecessary to discuss separately headaches due to acute and chronic affections of each sinus as in the acute cases pain is usually more acute, and in the chronic, less acute. The location of pain is usually the same. Then, also, there are usually many acute exacerbations in the chronic cases.

Frontal Sinusitis.

In a typical case of frontal sinusitis, pain is located over the distribution of the sensory nerve supply of this sinus, that is, in and about the eye and over the supra-orbital ridge. It may be a dull or lancinating pain. Usually, like all typical sinus pain, it is diurnal, beginning each day as a dull ache shortly after arising, reaching its intensity about noon, and gradually subsiding, to reappear the next day. In severe cases pain is more or less constant, but is even then worse during the day.

Ethmoiditis.

Infection of this sinus, at least infection of the anterior ethmoid, would be expected to produce pain in the same location as infection of the frontal, as it is supplied by the same sensory nerve and is the parent of the frontal sinus. However, their locations are different, and swelling of many cells situated external to and within the middle turbinate would be expected to produce even more pressure symptoms than infection of the frontal sinus which, like the antrum, is usually one bony cavity. Also, the frontal sinus is, so to speak, extra-nasal, and the ethmoid, intra-nasal.

Hence, pain due to the ethmoid is not typical of its nerve supply. It is located as a rule over the parietal region, and is a dull pressure rather than a pain. When severe, it may extend over the temporal region and the vertex. It may also be between the eyes, above the root of the nose as though a wedge were prying the nerve apart in the turbinate region. If the entire ethmoid is involved, or the posterior ethmoid alone is involved, then we will be apt to get involvement of Meckel's gangloin with reflex pain referred to mastoid, occiput, and possibly to shoulder, arm and fingers.

Maxillary Sinusitis.

Pain from infection of this sinus is probably the most atypical of any of the sinus infections. According to Skillern, typical pain from an antrum infection is directly over the frontal sinus on the same side,—at times so severe that many frontals have been opened and found not diseased. However, when pain is referred to the frontal, there usually is a feeling of distention or pressure over the maxillary, yet tenderness is scarcely ever elicited over the maxillary except in severe acute conditions. According to Braswell and others, the pain in antrum sinusitis is located in the cheek, upper jaw, and may be referred to the teeth, eye, supra-orbital region and even to the ear. This seeming variation of the distribution of pain only goes to show, in my opinion, that there are so many factors concerned in infection that one case will cause involvement of Meckel's ganglion alone and give reflex symptoms. Another case with the same sinus involved will not affect Meckel's ganglion, and those with infection and no discomfort will affect neither Meckel's nor the sensory fibers supplying that sinus.

Sphenoiditis.

Next to pain of frontal sinusitis, sphenoiditis is probably the most typical. There is a feeling of pressure in the occiput, and if Meckel's ganglion is involved, which is to be expected from its position, there will be reflex pain to the mastoid process, temporal region, and possibly pain in the shoulder, arm and fingers. In other words, we have the spheno-palatine syndrome of Sluder. A very constant location of pain is in the vertex especially in quiescent periods between paroxysms. The pain here, as in most types of sinusitis, is paroxysmal and comes on at any time of the day, and does not remit like pain due to frontal sinus infection. Skillern claims that pain occasionally occurs directly below the eye in the region of the infra-orbital notch. Dizziness in stooping is more constant here than with infection of any other sinus.

In regard to pain in general relative to sinusitis, this occurs to me: 1st—There is a vast difference in the description of pain relative to infection of a specific sinus by a number of equally good rhinologists.

2nd—We ourselves have seen apparently equally severe an infection in two individuals with the same sinus involved, in which one will suffer severely from pain, while the other will have scarcely any or no pain. How can we explain this difference?

I shall attempt to give my views on the subject if you will permit me:

1.—There are, of course, no two noses exactly alike, that is, in size, shape, position, and size of sinuses, or even in the number of cells in the cellular or partly cellular sinuses, that is, the ethmoid and at times the frontal, maxillary and sphenoid. Also, there are differences in the size and position of ostia and relation of depth, sensitivity and distribution of nerves. We have all noticed that in cases with deflected septa sinusitis, especially of the chronic type, is much more frequent on the obstructed side, and, if we cared to look closely, I am sure we would find that acute conditions are more frequent on the open side, but here drainage is better and cure more spontaneous. Therefore, it is perfectly conceivable that in the two hypothetical cases mentioned above, the one that suffered severe pain has not the room for expansion, due to inflammation, as the one that had little or no pain. A patient with a wide nose, with a surplus of room in the nasal chambers, seldom ever has nasal obstruction complete enough, even during a cold, to produce pressure pains, while another with a deflected septum, or a straight septum with a narrow nose and little room in the nasal chambers, gets pressure symptoms from the slightest cold.

2.—With our present methods of diagnosis, it also oftens happens that there is one sinus which is manifestly infected, and one or more which are also infected but are not in evidence, and we necessarily are apt to get reflex pain from all infected sinuses, but our attention is centered on the sinus which is attracting our attention and the pain would necessarily be atypical for that sinus. Just as we seldom have a severe middle ear infection without some involvement of the mastoid, so I believe we seldom have a severe single sinus infection without some change in one or more of the other sinuses, and the secondary sinuses may be so situated that the symptoms are atypical of the known infected sinuses.

3.—Anatomic variations likewise produce pressure headaches. Chief among this type of cases is vacuum frontal headache described by Sluder. Many noted rhinologists have doubted the existence of this condition, but as far as it is possible to demonstrate, I, for one, have seen several. As the frontal sinus is the best anatomically situated for this condition to occur, it is more often seen in this sinus. Just as the middle ear with an intact drum when the Eustachian tube becomes occluded is gradually relieved of the confined air, so, also, the frontal sinus when the infundibulum becomes occluded is relieved of its confined air and partial vacuum is formed, which produces pain very similar to frontal sinusitis, except that pain comes on rather more gradually and subsides immediately the negative pressure is relieved. Others have described vacuum headache from occlusion of all or most of the other accessory sinuses; I have seen such a condition occur in the sphenoid sinus.

The most common type of pressure headache is caused by pressure in and around the middle turbinate, which I happen to know from personal experience, if you will pardon a personal reference. This condition is usually very typical; one becomes more or less suddenly aware that one side of the nose is becoming occluded. There is a gradual feeling of fullness and pressure around the bridge of the nose on the side in the location of the middle turbinate. It feels as if a wedge had been placed in this location. The eye on this side becomes sensitive and slightly sore; soreness extends downward under the eye on the same side and into the temple. Immediately the pressure is relieved, the symptoms promptly disappear.

4.—New growths of the nose and accessory sinuses may cause pain, even in the early stages, especially if they are so located that they produce pressure. If they do produce pressure, the distribution of pain will be necessarily influenced by their location. However, tumors may reach the inoperable stage before pain is produced. The often-seen benign polyp may or may not produce pain, but here we have a condition different from new growths in general. It is pretty generally admitted that polypi do not form *per se;*

there is always an underlying diseased condition, and polypi are produced by cystic degeneration of the mucosa. If the underlying condition is fairly active and associated with polypi, or if polypi have formed, for instance, in the mucosa of the ethmoid cells, pain is apt to occur. If not very active, the presence of polypi alone is not apt to produce pain, as they are usually very compressible and conform readily to the open spaces in the nose, and seldom produce pressure.

Headache is probably the most universally distributed symptom of mankind, and if we can so classify it that its cause can be more readily found, then we shall be in a better position to relieve some of the sufferings of our race.

REFERENCES.

Greene, D. C.: The Rhinologic Aspect of Headaches and Cranial Neuralgias. *Annals of Otol., Rhinol., and Laryngol.*, 1925, 34:715.

Sluder: Headaches—Eye Disorders of Nasal Origin. St. Louis: Mosby. 1919.

Skillern, Ross Hall: Headaches—The Nasal Aspect. *Annals of Otol., Rhinol., and Laryngol.*, 1925, 34:917.

Braswell, James C.: The Nasal Aspect of Headaches. *The Laryngoscope*, 1927, 37:317.

515 *Medical Arts Building.*

X-RAY IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.*

By JOHN A. HAWKINS, M. D., Danville, Va.

The X-ray is probably the most valuable aid we have today in the diagnosis of pulmonary tuberculosis. Its proper application in the hands of experienced, yet not too enthusiastic, operators will many times clear up a doubtful chest diagnosis. There is no such thing as "independent" X-ray diagnoses of lung conditions, and they should not be expected by the clinician. To derive the most information about a patient who is suffering from some lung infection, it is imperative that the clinician and the roentgenologist work hand in hand to this end.

A carefully taken history should be available to both, and it should be thoroughly studied. The physical findings should be checked with the X-ray findings and an honest effort made to explain any gross differences in findings.

The X-ray examination should be done with the patient in the erect position. The fluoroscopic examination is important and will give information about the size, shape and position of the heart and aorta, the shape, position and movements of the diaphragm, and the lighting of the apices on coughing. It will reveal only gross lesions of the lungs, but films will be required to demonstrate the fine detail so necessary in chest diagnosis. Exposure time should not exceed one-half second for adults and one-twentieth to one-tenth second for infants and small children. Stereoscopic films are, in my opinion, a modern day necessity, and every modern laboratory should be equipped with apparatus for doing such examinations with a minimum of discomfort to the patient. A few seconds more or less means but little to those of us who are blessed with two good lungs, but a fraction of a second means much to a patient who is breathing with half a lung, or less. The apparatus should be arranged and the factors should be correct before the patient is placed in position on the plate changer.

It is most difficult to describe the X-ray appearance of a normal lung. Many factors which are met with in every-day life materially alter the lung appearance. Repeated acute infections of the respiratory apparatus, long exposure to dust or smoke, and old age cause marked increase in the density of the hilus and bronchial shadows. In such cases, the history is valuable and its importance is readily seen. The hilus shadows vary within wide limits normally, both in size and density. They give much more information in infants and children than in adults. A diagnosis of hilar tuberculosis may often be made with the X-ray findings alone in these little patients. The lung tissue does not cast a shadow in the normal lung, and the bronchial shadows are, as a rule, not visible.

One of the first changes noted in tuberculosis is a prominence of the bronchial markings. These extend well out into the lung substance and frequently "beading" along their course is seen. In the moderately advanced stages these shadows may extend nearly to the periphery, and small triangular areas of increased density are seen with their base toward the periphery. It is in this stage that rales are first heard and the diagnosis by the stethoscope made possible. Before this stage the diagnosis rests, not on physical signs in the lungs, but on a carefully taken history, temperature chart

*Read as part of a symposium on Tuberculosis at the Institute, held in Danville, Va., in January, 1928.

and the X-ray findings. In the more advanced stages these triangular spaces of increased density may coalesce and go on to cavity formation. We are not concerned here with the diagnosis of tuberculosis beyond the stage of cavity formation. Usually before this stage is reached the diagnosis may be made by the average layman.

The purpose of these Institutes now being sponsored by the State Board of Health is to educate the physicians of the state in the diagnosis of "early" pulmonary tuberculosis. Personally, I appreciate very much the efforts of Dr. Harper and the Health Department. The talks and demonstrations have been most instructive to me, and I feel that I have a better understanding of tuberculosis now than I have ever had.

May I, in closing, urge a closer co-operation between the family physician, his consultant, and the roentgenologist?

TULAREMIA.

Report of an Interesting Case

By H. G. LONGAKER, M. D., Newport News, Va.

L. C., No. 748 25th Stret, Newport News, Va. Age 38, Negress-Cook.

Working Diagnosis.—Infection left index finger.

Family History. — Husband living and well—ten children, six of whom died in infancy and four are living and well.

The past medical history is negative with the exception of ten pregnancies and an operation in 1919 the details of which she does not know and only thinks that she was operated upon for a tumor.

Present Illness.—Eight days ago, November 22, 1927, the patient stuck a splinter in the left index finger. She thought she removed the splinter and dismissed the affair with no further thought. The history at a later date develops the fact that on November 28, 1927, the patient dressed six rabbits. On November 29th, she was suddenly taken sick with a severe headache and a temperature of 105. She was admitted to the hospital.

Physical examination was entirely negative with the exception of a mid-line abdominal scar and the left index finger. This finger appeared normal—there was no redness, no heat and no swelling. It was apparently very sore to the touch. The epitrochlear gland on this extremity was very large and tender. The blood count was as follows:

Hemo.	80%
R. B. C.	4560000
W. B. C.	12200
Polys.	78
S. L.	18
L. L.	4

The urine was negative with exception of a number of pus cells.

December 2, 1927. A small incision was made in the tip of the left index finger and about two drops of pus escaped. The finger was dressed with ichthyol.

December 4, 1927. Finger very sore—no drainage—opened wide under novocain. No pus and no splinter found. Wet dressings applied. The epitrochlear and axillary glands were very large.

December 5, 1927. The general condition of patient is not good—a very definite pblebitis of the veins of the left arm is present. The entire arm was dressed with hot saturated solution of magnesium sulphate.

Blood count, W. B. C. 11,600; Polys. 75; S. L. 15; L. L. 10. Blood culture—Sterile.

December 8, 1927. Wassermann negative; Widal negative.

December 11, 1927. Condition about the same. There is a large mass palpable above the elbow on the left arm. The patient was taken to the operating room and under novocain this mass was explored in all directions. No pus was found.

December 16, 1927. Condition unchanged. Left index finger was X-rayed and bone found to be normal.

December 17, 1927. Complete physical examination was negative with the exception of tenderness on moderately deep palpation over the region of the gall-bladder. Blood count W. B. C. 10,200; Polys. 73; S. L. 20; L. L. 6; Eos. 1. The urine showed a cloud of albumen and a moderate number of pus cells.

On December 19, 1927, patient was cystoscoped. The bladder was found to be normal with exception of a mild degree of congestion. Catheterized specimens from each kidney were normal on examination. The appearance time of the dye was three minutes on the right side and three and one-half minutes on the left side.

December 21, 1927. Sutures were removed from wound above the elbow. This wound

healed by primary union. The finger is discharging a small amount of pus.

December 31, 1927. Condition not good. Patient is very weak—having myocardial attacks—pulse rate at times as high as 180-200 per minute. Stimulation with whiskey, strychnia and digitalis. On this date the second blood culture was sterile.

January 2, 1928. Blood count W. B. C. 10,800; Polys. 70; S. L. 17; L. L. 12; E. 1.

January 9, 1928. Examination of eyes, ears, nose and sinuses was negative.

January 10, 1928. Physical examination negative with exception of some tenderness over the region of the gall-bladder. Heart action is again good. Pulse rate 100-110 per minute.

January 16, 1928. X-ray studies showed what was thought to be a very large gall-bladder. After consultation it was deemed best to subject the patient to an exploratory operation suspecting that the gall-bladder was diseased and possibly accounting for the patient's prolonged illness.

January 23, 1928. Operated upon. A straight upper abdominal incision about 4 ins. in length was made over the middle of the right rectus muscle. The gall-bladder was exposed and found to be bound to the liver, transverse colon, omentum and pylorus by fairly firm adhesions. The gall-bladder was very large and showed a very firm adhesion around the middle of it which gave it an hour-glass appearance. The gall-bladder was removed. It contained some bile which had a watery appearance. The lining of the gall-bladder was inflamed and unquestionably pathologic.

January 24, 1928. Reacted from operation in good condition.

January 26, 1928. Condition improving.

February 2, 1928. Sutures removed—wound healed by primary union. Condition good. Blood sent to Hygienic Laboratory in Washington for examination for Tularemia.

February 3, 1928. Report from Dr. Ed. Francis at the Hygienic Laboratory: Blood from L. C. positive for Tularemia dil. 1-160.

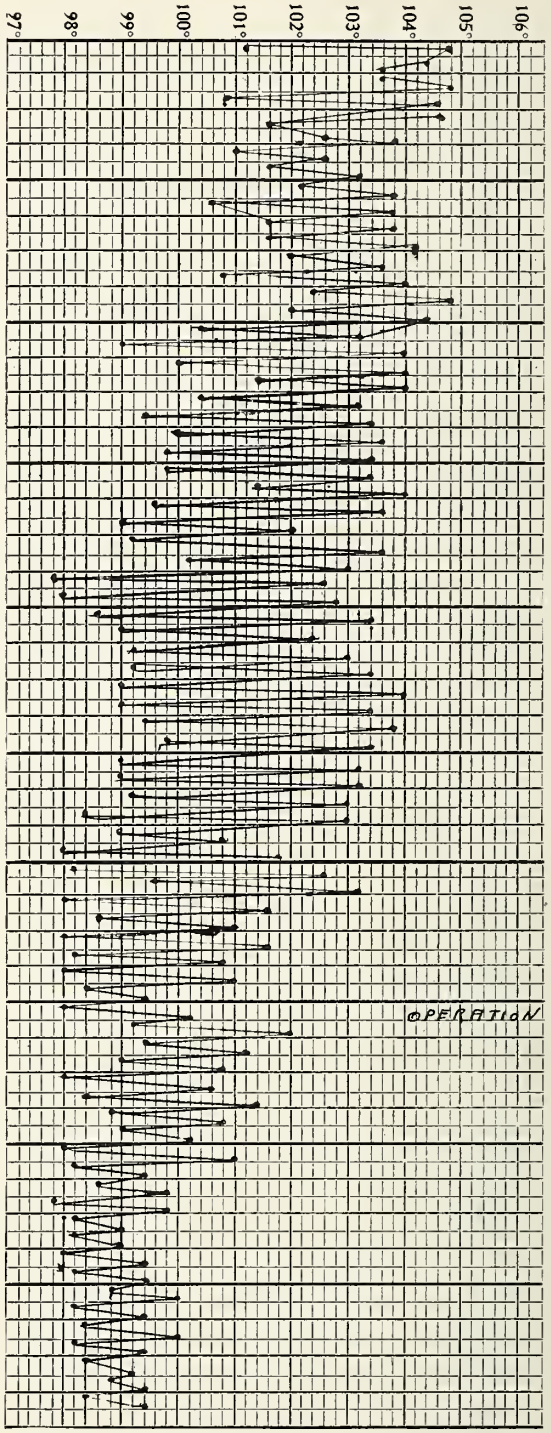
February 5, 1928. Condition improving. Temperature normal for first time.

February 7, 1928. Out of bed for half hour.

February 11, 1928. Out of bed for two hours.

February 13, 1928. Out of bed all day.

Comment.—This patient presented all the symptoms ascribed to Tularemia with the exception of the sweats so frequently described.



Temperature chart of Lavimia Claybourne from November 30, 1927, to February 14, 1928, inclusive, showing high and low temperature for each of the 77 days.

The temperature seemed to have been more persistent and higher than usual and the accompanying chart does not show the initial rise, remission and secondary rise which is described in so many cases.

The patient presented evidences of gall-bladder pathology. Considerable consideration was given this phase of the situation before operation was advised. After the cholecystectomy the patient made a continuous and uneventful recovery. Reference to the accompanying temperature chart is rather striking in this respect. The inference is that the pathology in the gall-bladder was a factor in prolonging the case.

Dr. Edward Francis of the U. S. Public Health Service in a paper read before the Conference of Illinois Health Officers at Springfield on October 13, 1927, cites a case of Tularemia manifesting symptoms of cholangeitis that died eight days after being subjected to an exploratory abdominal incision.

ANATOMY OF THE LUNGS AND PATHOLOGY OF PNEUMONIA.*

By J. M. BAILEY, M. D., Hopewell, Va.

I have been asked to give a synopsis on "Anatomy of the Lungs and Pathology of Pneumonia". We will first take up:

Anatomy of the Lungs

The first trace of the lung is seen on the third day of embryonic life as two hollow outgrowths from the ventricle side of the esophagus. By the meeting of these two lateral outgrowths, the esophagus is divided into two parts; the upper is the esophagus proper, and the lower part into which the lung rudiments open will be the trachea. As the two lung rudiments grow backward the mesoblast collects around them as two lobes. It is from the mesoblast that the elastic, muscular, cartilaginous and other tissues of the lungs and bronchial tubes are formed. The mesoblast is the middle layer of the three germ layers.

Each lung is invested by a delicate serous membrane, the pleura, and the pleura is divided into two layers,—the visceral layer, which lies next to the lungs, and parietal, which lines the inner surface of the thorax. The space between the two layers is called the pleural cavity, which contains a small amount of clear fluid normally. Each pleura is a closed sac, one occupying the right and the other the left half of the thorax. The two pleural sacs do not meet in the mid-line except anteriorly opposite the second and third pieces of the sternum. The space between the pleural sacs is called the mediastinum, which contains all the thoracic viscera except the lungs. The lungs are the essential organs of respiration, two in number, placed one on each side of the thorax, separated from each other by the heart and contents of the mediastinum.

Each lung is conical in shape and presents for examination an apex, base, three borders, and two surfaces. The apex extends from the first rib upward into the neck about two inches. The base is concave and rests upon the convex surface of the diaphragm. The external surface is smooth and convex and corresponds to the form of the cavity of the thorax. The inner surface is in contact with that portion of the pleura which forms the lateral boundary of the mediastinal space. It presents a deep concavity which accommodates the pericardial space. Above and behind this concavity is a triangular space, the hilum, which contains the structures which form the roots of the lungs. The chief ones are, from before backward on both sides, the pulmonary veins, pulmonary artery, and the bronchi and bronchial vessels. The left lung is divided into two lobes by an oblique fissure which extends from a little above the lower end of the spine of the scapula downward and forward with its convexity downward and terminates at the junction of the fifth rib with the sternum. The right lung is divided into three lobes by two fissures. One extends from the middle of the spine of the scapulae downward and forward to the junction of the third rib with the sternum. The other fissure extends from the middle of the spine of scapula downward and forward to the junction of the fifth rib with the sternum.

The above boundary lines of the lobes are only approximately correct as they vary to a slight extent in different individuals.

The bronchi are a continuation of the trachea, and are at a level with the fifth dorsal vertebra, extending into the lungs. The right and left bronchi are not similar, but differ in that the right is shorter, larger and more nearly horizontal, whereas, the left has a considerable obliquity downward.

*Read before the Post-Graduate Medical Society of Southern Virginia, December, 1927.

Pathology of Lobar Pneumonia

Pathologically lobar pneumonia is characterized by inflammatory changes which take place in the lung, due to the action of the pneumococci, and it is divided into the following stages: Stage of engorgement, red hepatization, gray hepatization, and resolution, but it is rare to find solely the lesions characteristic of a given stage.

Stage of Engorgement.—This is the earliest manifestation of pneumonia and is rarely seen at autopsy except in spreading pneumonia or when the patient dies from some other cause. The change is vaso-dilatation with engorgement of the parenchyma and an exudate of serum with a few red corpuscles and leucocytes into the alveoli. Microscopic examination shows engorged and distended capillaries, arteries and veins, swollen alveolar epithelium and coagulated serum. This stage lasts but a few hours before red hepatization develops.

Stage of Red Hepatization.—In this stage the involved lung is reddish brown in color, heavy and non-air containing. It is found to be friable, firm and airless. When scraped with a knife there is a little moisture and fibrinous plugs from the alveoli and bronchi often rise above the surface. On microscopic examination, the alveoli are distended with an inflammatory exudate which is rich in fibrin, pneumococci, red cells, leucocytes and desquamated epithelial cells. The alveolar wall, the peri-bronchial and peri-vascular tissues are edematous and infiltrated with leucocytes, and the small bronchi are plugged with fibrinous exudate. The blood vessels may be patent, or compressed, and sometimes occluded with thrombi. The lymphatics are distended with serum, fibrin and leucocytes.

Stage of Gray Hepatization.—In this stage the lungs are grayish in color, enlarged, firm and non-air containing. The surface is covered with a plastic exudate which can be peeled off in layers. The cut surface is mottled, the variation in color being due to the leaking of the red cells and the metamorphosis of the discharged hemoglobin. The tissue is moist, and a turbid fluid can be expressed from it.

Microscopic examination shows the alveoli closely packed with an exudate consisting mainly of leucocytes, pneumococci with a little fibrin, and a few red cells.

Stage of Resolution.—In this stage the lung is soft, friable and jelly-like. Microscopic examination shows a disintegration of the cells of the exudate, which are often quite fatty. The exudate is liquefied by the action of proteolytic enzymes furnished by the leucocytes and the bulk of the inflammatory material is removed by absorption.

The stage of repair of the alveolar epithelium after the removal of the exudate is rarely seen. It is remarkable how little involvement of the lung tissue itself occurs in pneumonia. The entire process seems to take place in the alveolar space and involves only the superficial epithelium of the air spaces, so that the complete restoration of the lung is readily brought about after the inflammation subsides. Organization or rarefaction of the exudate may take place in a few cases. In this condition, the exudate, instead of undergoing resolution by absorption, is invaded by blood cells and fibroblasts with a resulting fibrosis of the lung. The cells of the alveolar walls proliferate, non-connective tissue is found in the exudate, and a new fibrous tissue replaces the inflammatory tissue. The lung is now firm, elastic, reddish in color, and often covered with fibrinous adhesions. When the exudate is thus replaced, the lung is essentially functionless and the condition is described as an organizing pneumonia, chronic interstitial pneumonia, pulmonary fibrosis, or delayed resolution.

Abscess formation is rare, but occasionally we have a large sub-pleural abscess which ruptures into the pleural cavity and causes a pyopneumothorax. Gangrene is also a rare accident of resolution and it results from a necrosis of the lung, usually due to a secondary infection with putrefactive bacteria.

In addition, we may find the following pathology in other internal organs: dilatation of the right side of the heart, and cloudy swelling of other internal organs. In about one-half the cases of pneumonia, the spleen is appreciably enlarged.

Bibliography.

Austrian, Charles R.: Acute Lobar Pneumonia, Tice's Practice of Medicine.

Davis, Gwilyn G.: Applied Anatomy.

Spitzka, Edward Anthony: Gray's Anatomy.

Mallory, Frank B.: The Principles of Pathologic Histology.

Christian, W. G.: Descriptive Anatomy.

Reese, Albert M.: An Introduction to Vertebrate Embryology.

WHY WE CONSIDER INFANTILE PARALYSIS A FILTH-BORNE DISEASE.

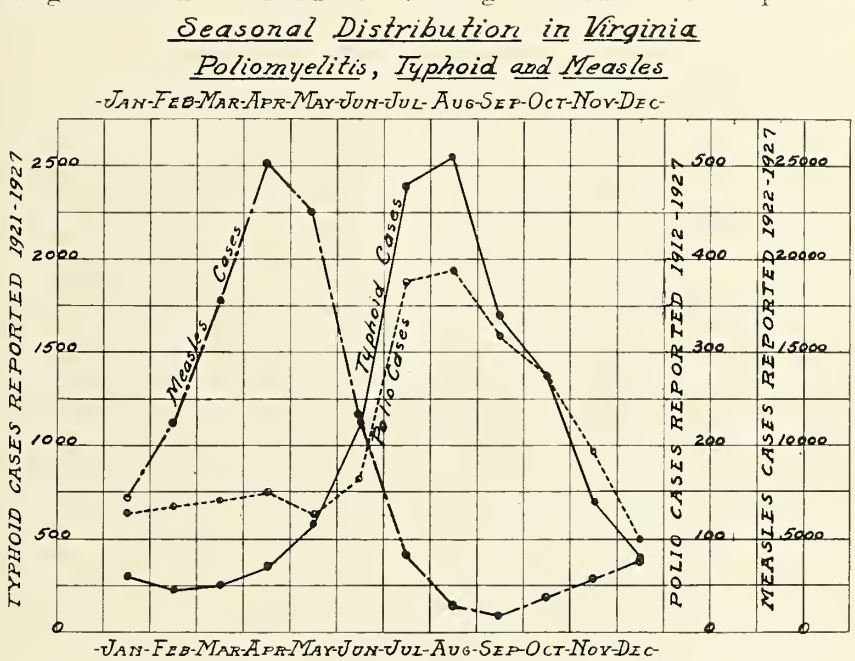
By ENNION G. WILLIAMS, M. D., Richmond, Va.
State Health Commissioner.

In the literature issued by the State Department of Health, poliomyelitis is classified with the filth-borne diseases, such as typhoid, diarrhoea and dysentery. Several doctors have written us asking why we have classified the disease this way rather than with diphtheria, or measles and other diseases carried by the secretions of the mouth and nose, as most of the present text books do?

Our reasons for considering polio as carried chiefly through human filth are as follows:

We do not say that infantile paralysis may not also be carried by secretions of the mouth and nose. The germs of typhoid fever can in the early stage of the disease also be found in these secretions. When we say that typhoid and polio are carried by the bowel discharges, we mean that through excreta is the most usual way for transmitting the germs or virus.

One might ask why there should be an epidemic of polio in New York City, which is so well sewered and has such a good water supply. I recall very distinctly Dr. J. N. McCormack, of Kentucky, who visited New York City at that time, telling me that he had never seen so many flies as were swarming in the neighborhood where the polio cases occurred.



1. No specific germ has been found. Its cause is believed to be a filterable virus. Experiments on monkeys show this virus to be both in secretions of the mouth and nose and in the bowel discharges. The disease has been transmitted to monkeys through both.

2. Its season of distribution is similar to the diseases carried by flies and filth. The curves for typhoid and polio in Virginia for the last fifteen years are amost identical. The curve for diseases carried by secretions in the mouth and nose are the reverse of filth-borne diseases.

3. Polio in our State is chiefly confined to sections where sanitation is bad. This was strikingly illustrated in the outbreaks in Virginia several years ago.

Even if flies had not been present, a good sewer system and good water supply may not have prevented the germs from filth being carried in some other manner, just as we have typhoid outbreaks in communities with a good water supply and sewer system.

It is interesting to note the usual sharp decline in the polio cases with the advent of cool weather. This happens with the other filth-borne diseases that are usually carried by flies, but the diseases carried by the secretions of the mouth and nose usually begin to rise with the advent of cool weather. We cannot eliminate the possibility of a specific insect being a factor in the spread of this disease, as the seasonal distribution is similar to that of the in-

sect-borne diseases as well as the filth-borne diseases. However, the increased prevalence in communities that are poorly sanitated and the frequent absence from spread in a well-sanitated community would indicate that insanitation cannot be ignored as a factor.

The evidence that polio is carried chiefly through the bowel discharges seems so great that we strongly recommend that the bedside precautions of a case should be similar to those of typhoid fever; that the excreta should be promptly and safely disinfected; that every effort should be made to exclude flies from the patient and from the home; and that the community for some distance about this home should make efforts to get rid of flies. The whole community should be sanitated or, in other words, all bowel discharges should be so disposed of as not to be accessible to flies and not endanger a source of drinking water. These additional precautions should be taken because we believe that there are many carriers of polio and many unrecognized cases that have symptoms with only a fever or perhaps slight intestinal disturbance, but no paralysis. In view of these possible carriers, the whole community should strictly observe the principles of sanitation mentioned above.

The accompanying chart shows the seasonal distribution of infantile paralysis, typhoid fever and measles, for a number of years past.

Analyses, Selections, Etc.

Renal Tumors: A Clinico-Pathological Study.

Wm. C. Quinby, on reviewing the end results of cases of renal tumor treated in the Urological Service of the Peter Bent Brigham Hospital, Boston, found an unexplained difference in the duration of life after operation, or in the date at which metastases became evident. Excluding all those instances where the growth was found to have already taken on invasive character, as well as those in which lymph nodes about the renal pedicle and aorta were found the seat of secondary deposit, there still lacked evidence on which to base an opinion as to the clinical prognosis. In other words, in not a few instances, apparently favorable for cure, metastases and death have taken place at a relatively short period after operation—and this in cases which had been carefully studied by X-ray of lungs and bones for metastases before operation, and in which the localized character of the tumor as seen at operation gave every hope of cure, or at least long freedom from metastases.

It was, therefore, hoped that a renewed study of the pathological appearance of the tumor as seen by the microscope, correlating this appearance with the clinical result, might serve to give added evidence as concerns prognosis.

Of the group of forty-three cases on record at the time this investigation was undertaken, there were thirty-five in which intensive pathological study was possible.

These cases are divided as follows:

I.	Primary adrenal carcinoma	3
II.	Adenocarcinoma of kidney	1
III.	Carcinoma of renal pelvis	2
IV.	Carcinoma of renal pelvis (associated with another type of tumor in the same kidney)	2
V.	Adenoma of kidney	2
VI.	Papillary adenocarcinoma of renal pelvis (malignant papilloma)	1
VII.	Renal tumor of hypernephroma type	24

Clinical Results

Dr. Quinby states that in thirty-one instances a nephrectomy has been performed with the result that thirteen patients are still living; sixteen are dead; and of two they have no information. Nine patients were alive and without recurrence at the time of this report, at the following intervals after operation:

10 years	1
8 years	1
6 years	2
5 years	1
4 years	1
3 years	1
1 year	1
4 months	1

Four other patients are alive, but have recurrences. It is of interest to note that in two of these recurrence was very late—in one nine years; in the other seven years after operation—and in each instance it took place in the region of the scar of operation.

General Description of the Forty-three Cases

Thirty of the patients were men, thirteen were women. The presenting symptom was pain in twenty-nine cases, tumor in twenty-five cases, and hematuria in twenty-eight cases.

Examined microscopically, the urine showed red blood cells in thirty-nine instances. In thirty of the patients there was slight fever; a finding also frequent in deep-seated malignancy of other organs and areas than the kidney. Sixty-two per cent of the patients were of the age group of from fifty to sixty-nine years inclusive and 88 per cent fell in the group of those forty years old and over. Only twelve of this whole group of patients appeared for investigation within three months after the appearance of symptoms, and in this regard the delay in reaching a proper diagnosis—not always the fault of the patient—is deplorable. One of our patients had bled intermittently for sixteen years, and five had had symptoms for from five to fifteen years.

In three instances renal calculus was associated with the renal tumor.

Conclusions

1. There is no adequate pathological criterion on which to base a prognosis as regards the duration of life after nephrectomy for renal neoplasm.

2. The size of a renal tumor is not a reliable indication of its character in respect to its degree of malignancy. Occasionally an entirely benign adenoma may reach large size.

3. Primary ligation of the vascular pedicle by transperitoneal approach is the most logical method of operative attack on such growths. (*Amer. Jour. Urology*, March, 1928).

L. T. P.

Serum Sensitiveness.

W. H. Park, M. D., Director, Department of Health Laboratories, New York, in a paper on "Deleterions Effects from Serum Injections", says: "I have had the opportunity of making a comparison in more than 100 individuals who had received toxin-antitoxin and in more than 100 individuals who have not received toxin-antitoxin. In my experience there was no appreciable difference in the reactions following serum injections in those who had toxin-antitoxin and in those who had not. If isolated cases in which marked reactions occur which happen in those who had toxin-antitoxin previously are reported, it is misleading because similar cases could be reported in those which have not received such injections. It is only by comparing the two lots that accurate information can be obtained.

"There was recently reported to me the case of a young girl who nearly died after a dose of scarlet fever antitoxin. She had not had toxin-antitoxin or any previous serum injection. If she had had, it would have been considered as the predisposing cause.

"From my own observations I am not at all worried by the slight degree of skin sensitization which may be produced by toxin-antitoxin."—(*Amer. Jour. of Public Health*).

Activities of the Rockefeller Foundation.

The first instalment of the review of the activities of the Rockefeller Foundation in 1927, written by its president, George E. Vincent, summarizes its work in brief:

During 1927 the Rockefeller Foundation, in disbursing from income and capital $11,223,124, (1) aided local health organizations in eighty-five counties of six states in the Mississippi flood area; (2) operated an emergency field training station for health workers in this region besides contributing toward the support of nine other training centers elsewhere; (3) assisted nine schools or institutes of public health and three departments of hygiene in university medical schools; (4) gave aid to seventeen nurse training schools in nine countries; (5) furnished funds for land, buildings, operation, or endowment to nineteen medical schools in fourteen countries; (6) supported the Peking Union Medical College; (7) paid two million dollars toward a new site for the University of London; (8) helped Brazil to maintain precautionary measures against yellow fever; (9) continued studies of that disease in West Africa on the Gold Coast and in Nigeria; (10) had a part in malaria control demonstrations or surveys in eight states of the Southern United States and in eleven foreign countries; (11) aided nineteen governments to bring hookworm disease under control; (12) contributed to the health budgets of 268 counties in twenty-three states of the American Commonwealth and of thirty-one similar governmental divisions in fourteen foreign countries; (13) helped to set up or maintain public health laboratory services or divisions of vital statistics, sanitary engineering, or epidemiology in the national health services of nineteen countries abroad and in the state health departments of sixteen American states; (14) made grants for mental hygiene work in the United States and Canada; (15) provided funds for biological research at

the Johns Hopkins University and aided investigations in this field at Yale University, the State University of Iowa, the University of Hawaii, the Bernice P. Bishop Museum in Honolulu, and certain universities of Australia; (16) helped the League of Nations to conduct study tours or interchanges for 125 health officers from forty-four countries, to supply world-wide information about communicable diseases, to train government officials in vital statistics, and to establish a library of health documents; (17) provided, directly or indirectly, fellowships for 864 men and women from fifty-two different countries, and paid the traveling expenses of 115 officials or professors making study visits either individually or in commissions; (18) made minor appropriations for improving the teaching of the premedical sciences in China and Siam, for the operating expenses of hospitals in China, and for laboratory supplies, equipment, and literature for European medical centers which have not yet recovered from the after-effects of the war; (19) lent staff members as consultants and gave small sums for various purposes to many governments and institutions; (20) made surveys of health conditions and of medical and nursing education in fourteen countries.

Roentgenology

At the Annual Meeting of the Roentgen-Ray Club of Virginia held in Petersburg in 1927, the advisability of a series of articles dealing with Roentgenology was discussed. It was brought out during the discussion, that many of the practicing physicians graduated before 1895, the year of the discovery of the Roentgen-Ray. Many others graduating one or two decades later had little or no instruction in this specialty. In addition to this, the uses of this method of diagnosis and therapy have increased tremendously, and each year finds some great advancement. Consequently, the busy practitioner, who has time for reading only the articles directly pertaining to his practice, skips over the articles dealing with Roentgenology, and does not realize the aid which he may receive from the newer methods of diagnosis and treatment. On the other hand, many excellent practitioners believe the Roentgenologist capable of visualizing any tissue in the body, such as nerves, muscles, ganglia, etc.

In view of the above discussion, a committee with Dr. V. W. Archer, University of Virginia as Chairman, was appointed to write a series of articles dealing with the generally accepted uses and limitations of the Roentgen-Ray as a method of diagnosis. This series was to be written for the benefit of the general practitioner, and was to be non-technical. While the committee was working on this, two articles by Dr. Leopold Jaches, Radiologist of the Mt. Sinai Hospital, New York City, appeared in the *Journal of the American Medical Association*, under the auspices, and with the approval of the Council on Physical Therapy. These articles seemed to cover the ground outlined by the Roentgen-Ray Club of Virginia, and with the permission of the author and of the *Journal of the A. M. A.*, these articles will be published in the VIRGINIA MEDICAL MONTHLY.

Roentgen-Ray Diagnosis.

LEOPOLD JACHES, M. D., Radiologist, Mt. Sinai Hospital, New York City.

These pages present a sketchy outline of the aid which can be rendered by the roentgen rays in the recognition of disease. The space allotted being limited, only the most salient features of roentgen-ray diagnosis can be touched on. Many of the rarer but nevertheless important conditions, and even some of the more frequent ones had to be omitted. An attempt, however, has been made to present the subject with sufficient completeness to enable the physician who is not thoroughly familiar with the possibilities of roentgen-ray diagnosis to obtain a fair index of the diseases in which the roentgen rays can be of aid to him.

RELATIVE VALUE OF ROENTGENOGRAPHY AND FLUOROSCOPY

This is not the place to discuss technic. The subject cannot be explained theoretically. Only practical instruction and demonstration can give one an idea of the methods to obtain desired results. It is appropriate, however, to discuss the relative value of fluoroscopy and roentgenography. As a general principle it may be stated that whenever organs in motion are to be studied, fluoroscopy is the method of choice. No roentgenograms, however large their number, can give the impression of the movements of the diaphragm, of the action of the heart, of the pulsation of the aorta, or

of the peristaltic activity of the stomach and intestines. In the latter organs even fluoroscopy, unassisted by the observer's palpatory manipulations, is generally insufficient. On the other hand, no recital or sketch of the fluoroscopic observations can equal the roentgenogram as a permanent record, nor can it furnish the fine detail often indispensable for a diagnosis. The best results are obtained by a combination of fluoroscopy and roentgenography when chest and gastro-intestinal tract are to be examined. Roentgenographic examinations are best when parts at rest are under consideration, such as bones, urinary concretions, and the nasal accessory sinuses. Fluoroscopy alone may be used in the study of cardiovascular lesions, large mediastinal tumors, or fluid in the chest. It is unsafe, however, to rely absolutely on negative fluoroscopic observations. The fine lesions of early pulmonary tuberculosis, for instance, are invariably overlooked, because either the fluoroscopic screen cannot register them with the detail that the photographic emulsion does, or human eyes are not sufficiently sensitive to detect any but the coarser shadows. It would be well for the internist or the surgeon who, following the present-day trend, installs a fluoroscopic outfit in his office, to bear in mind this limitation. Such warnings are especially appropriate at present when our younger men who spend a short time in the continental European roentgen-ray institutes bring back the idea that fluoroscopy is all that is necessary. At several of these institutions the chiefs or their assistants admitted that they were compelled to resort to fluoroscopy because it is cheaper. In estimating the relative value of these two methods one should also bear in mind that the greatest advances in roentgen-ray diagnosis made during the last twelve or fifteen years were accomplished in this country, where the fluoroscope, though unsparingly used, is generally subservient to the rentgenogram. This statement is not prompted by super-patriotism. Most American roentgenologists concede the superlative quality of European roentgenology. Many American radiologists received all or a great part of their early training in Europe and learned that even there the roentgenogram was preferred by those who had the necessary funds available. Such, for instance, was the method of Albers-Schönberg, the great pioneer roentgenologist. Though he used the fluoroscope constantly and eventually lost his life as a result, he made roentgenograms of everything.

Stereoscopy and the single roentgenogram each has its particular field. Two plain views at right angles to each other are more valuable than a stereoscopic set made in only one direction. Stereoscopic views at right angles to each other are, of course, better than plain views in two directions. In the skull, pelvis, shoulders and hips, where views at right angles to each other cannot be taken, the stereoroentgenogram will give the best results.—(*J. A. M. A.*, February 18, 1928).

(To be continued).

Bibliotheca Obstetrica

William Douglas.

Douglas (William). A letter to Dr. Smellie, showing the impropriety of his new invented wooden forceps; as also the absurdity of his method of teaching and practicing midwifery. 1 p. l., 25 pp. 8°. *London, J. Roberts*, 1748.

———. A second letter to Dr. Smellie, and an answer to his pupil confirming the impropriety of his wooden forceps; as also the absurdity of his method of teaching and practicing midwifery. 32 pp. 8°. *London, S. Paterson*, [1748?].

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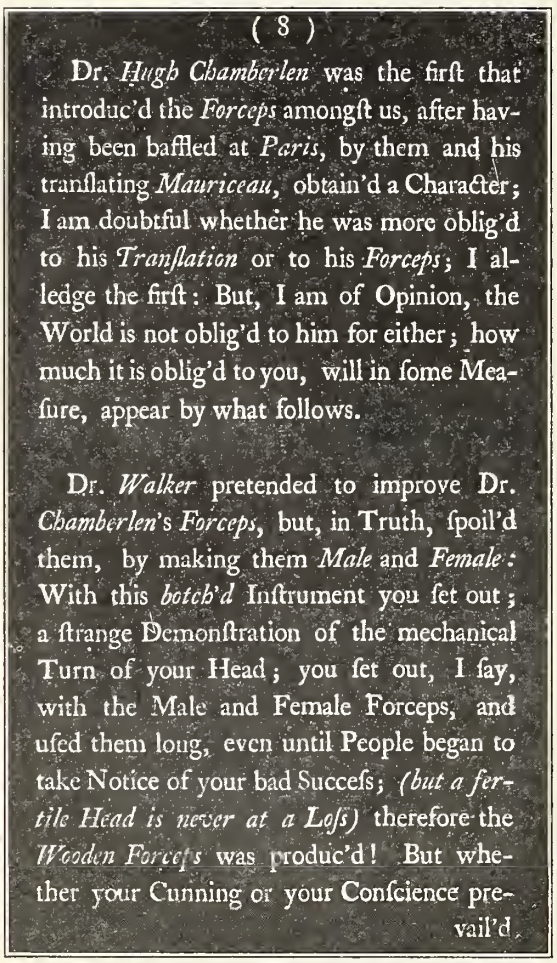
William Douglas is known only as a detractor of William Smellie. Of the well known carpers of the "Master of British Midwifery", John Burton, Frank Nicholls, William Douglas and Mrs. Nihell, Douglas was the chief. He finds fault with Smellie's innovation, the manikin, and with the use of forceps. It is, however, about the wooden forceps that he centers his vulgar abuse. He says that no less than eight women have died in a few months under the Hands of a *Wooden Operator*. "Such *monstrous Hands* are, like *wooden Forceps*, fit only to hold Horses by the Nose, whilst they are shod by the *Farrier*, or stretch Boots in *Cranburne Alley*." In another place he says "but this I can say for your Hand, that it has the Advantage of making Matters exceeding easy for the Husband."

It is strange that such coarseness should have been noticed by Smellie, but about the the time of Douglas' second letter Smellie published a twenty-seven page letter in reply. In this letter he explains that one of the advantages of the wooden forceps is that no noise is made when the blades are locked and there-

fore the patient is not as much alarmed as with the iron instruments. Smellie used the wooden forceps only a few times. I have not been able to find a picture of them. They would have passed into innocuous desuetude, had not Douglas turned them to his own purpose in ridiculing Smellie's personal appearance.

Nothing is known about William Douglas himself. Dr. Herbert Spencer says he was no



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Dr. *Hugh Chamberlen* was the firſt that introduc'd the *Forceps* amongſt us, after having been baffled at *Paris*, by them and his tranſlating *Mauriceau*, obtain'd a Character; I am doubtful whether he was more oblig'd to his *Tranſlation* or to his *Forceps*; I alledge the firſt: But, I am of Opinion, the World is not oblig'd to him for either; how much it is oblig'd to you, will in ſome Meaſure, appear by what follows.

Dr. *Walker* pretended to improve Dr. *Chamberlen*'s *Forceps*, but, in Truth, ſpoil'd them, by making them *Male* and *Female*: With this *botch'd* Inſtrument you ſet out; a ſtrange Demonſtration of the mechanical Turn of your Head; you ſet out, I ſay, with the Male and Female Forceps, and uſed them long, even until People began to take Notice of your bad Succeſs; *(but a fertile Head is never at a Loſs)* therefore the *Wooden Forceps* was produc'd! But whether your Cunning or your Conſcience prevail'd,

A page from the letter to Dr. Smellie.

relation to the brothers John and James who lived at the same time. James Douglas was a celebrated anatomist and is remembered as the discoverer of the pouch of periotoneum that bears his name. John Douglas was surgeon and devised a suprapubic operation in lithotomy. He had a more controversial disposition than his brother James, and became involved in disputes with W. Cheselden and with Chapman.

M. P. R.

Proceedings of Societies

Scott County Medical Society Organized.

The doctors of Scott County, Virginia, met at Gate City, Va., about the middle of April and organized a County Medical Society and applied for charter from the Medical Society of Virginia. Dr. N. W. Stallard, Dungannon, was elected president, Dr. J. M. Daugherty, Sr., Nickelsville, vice-president, and Dr. E. M. Corns, Gate City, secretary-treasurer. There are twelve charter members as follows: Drs. N. W. Stallard and O. E. Bevins, Dungannon; Drs. V. W. Quillen and J. M. Daugherty, Sr., Nickelsville; Drs. C. R. Fugate and S. B. Nickels, Clinchport; Drs. E. M. Corns, J. M. Daugherty, Jr., A. McG. Wallace and C. T. Barker, Gate City; Dr. H. K. McConnell, Mack; and Dr. R. W. McConnell, Fort Blackmore.

The Amelia County Medical Society

Met at Amelia C. H., Va., on April 23, 1928, and elected the following officers for the ensuing year: President, Dr. H. Cowles Rucker, Mattoax; vice-president, Dr. J. M. Habel, Jetersville; and secretary-treasurer, Dr. J. M. Hamner (re-elected), Mannboro.

Albemarle County Medical Society.

At a recent meeting of the Albemarle County Medical Society, the following resolution was adopted and sent this office to be placed on record:

We, the Albemarle County Medical Society, heartily endorse the campaign for the early diagnosis of tuberculosis, as sponsored by the National Tuberculosis Association during the months of March and April, 1928.

We shall gladly cooperate with the Virginia Tuberculosis Association in the furtherance of this work in this County and in the State.

(Signed) F. C. McCue, *Sec'y.*

Clinch Valley Medical Society.

On April 26th, the Clinch Valley Medical Society met at Tazewell, Va. About sixty doctors from southwest Virginia and West Virginia were in attendance. This included nearly eighty per cent of the membership.

The morning session was opened by an address of welcome by Mayor J. B. Boyer, of Tazewell. Dr. W. R. Culbertson, of Norton, Va. responded.

The scientific part of the programme was called to order by Dr. C. B. Bowyer, of

Stonega, Va., President of the Society. Dr. J. C. Sutherland, of Clintwood, was at the secretary's desk. Vice-presidents are Dr. J. M. Daugherty, Nickelsville; Dr. P. D. Pence, St. Charles; and Dr. T. T. McNeer, Dante. Dr. Isaac Peirce, Tazewell, was chairman of the local committee of arrangements.

Dr. J. S. Chalmers, of Appalachia, Va., read a paper entitled "Intravenous Sodium Iodide in the Treatment of Gonorrheal Epididimitis." This was followed by a paper upon "Heart Pain" by Dr. F. H. Smith, of Abingdon, Va. "Surgical Limitations Within the Abdomen" by Dr. Wade H. St. Clair, of Bluefield, W. Va., concluded the programme of the morning session. The members then took lunch at the Tazewell Hotel.

The regular order of the afternoon session was changed so that the pupils of the High School might have the opportunity of hearing a talk by the Health Commissioner of Virginia, Dr. Ennion G. Williams. He gave a very interesting talk upon the work of the State Health Department, stressing the part of the work that more closely touched school children. Many prominent laymen of Tazewell and the senior class of the High School filled the auditorium to hear Dr. Williams, so that standing room was at a premium.

After this, Dr. Greer Baughman, of Richmond, read a paper upon "Prenatal Care in Town and Country." He urged the closer contact between pregant women and the doctors. He further suggested the establishment of dispensaries in local hospitals for handling indigent cases. Dr. Garnett Nelson, of Richmond, followed with a paper on "Cardiovascular and Renal Complications of Pregnancy."

The society then adjourned to another building where Dr. John S. Horsley, Jr., of Richmond, demonstrated with lantern slides the result of plastic surgery, followed by a lantern slide demonstration of bronchoscopic cases by Dr. Harry H. Haggart, of Bluefield, W. Va.

Following the scientific session a very delightful banquet was served in the Sunday School room of the Methodist church.

Dr. C. B. Bowyer was the recipient of congratulations because of the success of the meeting both from a social as well as a scientific standpoint. He was the prime mover in the organization of the Society, which embraces the counties of Buchanan, Dickenson, Lee Russell, Scott, Tazewell and Wise, and much credit is due him for the excellent meetings which have been held.

The next meeting will be held at Appalachia, Va.

Danville Academy of Medicine.

Drs. L. O. Crumpler and J. T. Daves, both of Danville, Va., read papers at the meeting of the Academy held on May the 8th. Dr. Greer Baughman, Richmond, who has charge of the pre-natal clinics being conducted by the State Board of Health, also gave an address. In lieu of the April meeting a large number of the Danville doctors rode to South Boston to attend the Spring meeting of the South Piedmont Medical Society on April the 17th.

The South Piedmont Medical Society

Held its regular semi-annual meeting in South Boston, Va., April 17, under the presidency of Dr. Sam Wilson, of Lynchburg. In addition to the papers on the subject for general discussion on "Pernicious and Splenic Anemia", a number of other papers were presented by members and invited guests. Between the afternoon and evening sessions, supper was served.

During the business meeting, Dr. William R. Martin, Charlotte C. H., was elected president for the ensuing year; Dr. C. D. Bennett, of Chatham, vice-president, and Dr. George A. Stover, of South Boston, was re-elected secretary-treasurer.

University of Virgina Medical Society.

The sixth meeting of the University of Virginia Medical Society was held on March 19th at the University of Virginia Hospital.

Dr. John H. Neff reported a case of congenital hypertrophy of the verumontanum in a two year old child. Original studies had shown 130 c.c. of residual urine, tremendous dilatation of both ureters, streptococcus infection, 10 per cent two-hour phthalein output. Much improvement followed continuous catheter drainage and two fulgurations of verumontanum. A later cystostomy had been used for drainage for twelve months. The two-hour phthalein output was recently 55 per cent. An especially constructed urethroscope for future attack upon the verumontanum was demonstrated. He believed the condition to be quite rare. Bugbee, in 1923 and 1924 in reporting one clinical case, and ten instances among 4,903 autopsies at the Babies' Hospital, stated the anomaly had not been previously recorded.

Dr. L. T. Royster presented two cases of

vaso-motor disturbance in children in whom the diagnosis had not as yet been made. He discussed the possibilities of acrodynia, erythromelalgia and allied conditions. He gave a brief summary of the recent literature on the subject.

A brief review of the literature to date concerning the Minot-Murphy liver diet was made by Dr. S. D. Blackford and six cases treated in the University Hospital were summarized. Each of the six cases illustrated some particular virtue of the liver diet in the treatment of pernicious anemia. Drs. Smith, Kindred, Speidel, and Wood entered the discussion.

The final paper of the evening was "Foreign Bodies in the Esophagus and Air Passages" by Dr. F. D. Woodward. Dr. Woodward reviewed much of Chevalier Jackson's work on this subject and then showed lantern slides of a dozen or more cases in which he had successfully removed foreign bodies in the last three years. Dr. L. T. Royster discussed this paper and gave a resumé of the diagnostic signs of foreign body in the lungs in children.

The seventh meeting of the University of Virginia Medical Society was held on April 2d at the University of Virginia Hospital.

Dr. Richard Meade gave a review of the subject of "Massive Collapse of the Lungs," with report of a case now under treatment. Dr. E. N. McPeak demonstrated X-ray films from the patient.

The remainder of the evening was devoted to a consideration by Dr. L. T. Royster, of "Various Aspects of Malnutrition in Children," illustrated with many lantern slides.

The eighth meeting of the University of Virginia Medical Society was held on April 16th at the University of Virginia Hospital, Dr. Bray presiding.

Dr. F. H. Fechtig exhibited a case of Friedreich's ataxia in a child from the Pediatric Service. Family history not conclusive. Discussion by Dr. W. W. Waddell.

Dr. Allen Voshell exhibited a boy from his service with muscular dystrophy, and discussed the evidence for a final diagnosis.

A case report was given by Dr. Oscar Swineford of trichiniasis of local origin.

Dr. Bruce Morton reported a case of cholecystitis with operation, pictures and specimens in which the ascaris was found as the cause. In this connection he gave a review of the literature.

The guest of the evening was Dr. C. W. Beauchamp, of Charlottesville, who described focal infections in teeth, reviewing his own experience and exhibiting a series of X-ray lantern slides and entering into the relationships between the tooth infections and other maladies. Dr. Fletcher Woodward discussed this paper, with special reference to the eye conditions attributable to focalized infection at the roots of teeth and the sinuses.

Woman's Auxiliary, Medical Society of Virginia

DOCTOR: PLEASE CALL ATTENTION OF YOUR WIFE TO THIS DEPARTMENT.

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary and Treasurer, Cottage Toll Road, R. F. D., Norfolk, Va.

The Child's Bill of Rights.

The Woman's Auxiliary to the American Medical Association has pledged its service to the American Child Health Association, and every member is asked to give the Child Health Program all the endorsement and publicity possible.

The Auxiliary is pushing the birth registration for the entire nation, and has adopted the prenatal and preschool age child as its principal work in Child Health.

On May 1, 1928, America's Child Health Day celebrated its fifth birthday.

The Woman's Auxiliary is one of the thirty-nine national organizations which form the spokes in the big May Day wheel.

Make the child's bill of rights a working platform in every community.

Better children for our Nation; a better nation for our children.

THE CHILD'S BILL OF RIGHTS

The ideal to which we should strive is that there shall be no child in America:

That has not not been born under proper conditions;

That does not live in hygienic surroundings;

That ever suffers from undernourishment;

That does not have prompt and efficient medical attention and inspecion;

That does not receive primary instruction in the elements of hygiene and good health;

That has not the complete birthright of a sound mind in a sound body;

That has not the encouragement to express in fullest measure the spirit within which is the final endowment of every human being.

HERBERT HOOVER.

To make the vision of this "Bill of Rights" a working program in an increasing number of communities is

THE PURPOSE OF MAY DAY—NATIONAL CHILD HEALTH DAY

The Child's Bill of Rights is a complete guide to every needed activity to round out the life of the child. Let people everywhere help to incorporate these definite aims into the lives of children:

1. Preparedness for parenthood: motherhood, fatherhood, pre-natal care.
2. A wholesome home environment: physical, cultural.
3. Sound nutrition.
4. Physical examination, correction of defects, protection against disease.
5. Training in health habits and knowledge: in the home, in the school.
6. Mental and emotional soundness: through inheritance, through environment.
7. Spiritual encouragement: through the home, through the church.

THE WORLD THE CHILD LIVES IN

By AIDA DE ACOSTA BRECKINRIDGE.

(From the American Child Health News).

All sorts of things contribute to make the child's world a happy place for sound development of body, mind and spirit. But perhaps none is more important than a clean and safe milk supply. Children must have milk, but it needs to be safe milk. Otherwise we shall have epidemics of sickness instead of progress toward our goal of healthy, happy, splendid children.

Much has been done in the last few years to ensure clean and safe milk to our American people. Not only have great, model dairies come into existence but in many states and many communities ordinances have been passed and enforced for the protection of the milk supply. The day is passing when a farmer does not wash his hands before he milks his cows. Moreover he washes his cows and provides a clean stable. He sterilizes milk-pails; he protects the milk from dirt and germs after he has milked it. His conscience has been aroused, because he has learned the difference between dirty milk and clean, safe milk. He does not want to feed dirty milk to his own children or sell it to his neighbors.

We have reason, then, to rejoice; but, according to the report of the Survey of Small Town Milk Supplies, recently published by the American Child Health Association, we have still a long way to travel before America's milk supply will be one hundred per cent clean and safe. Out of one hundred and seventeen towns with a population of less than twenty-five thousand, ninety-seven do not pasteurize their milk. In only two of the towns or cities was most of the milk found to be clean. In the rest it was really dirty, the kind of dirty that left a deposit when it was poured through a filter of cotton. In nineteen cities half the milk proved to be clean or "fairly clean." In one hundred and nine towns and cities the milk was not kept on ice while it was being delivered. In seventy-one cities half of the milk registered 55° F. at the time of delivery. Germs, or bacteria to speak more scientifically, thrive in milk at that temperature or above, and accordingly threaten the health of the people who use it.

We are working not only to make *better children for our nation* but also to make *a better nation for our children.* Let us step on the accelerator and include a clean and safe milk supply in the goal toward which we are working for May Day 1928.

The Woman's Auxiliary has its Committees on "Pure Milk" and has been doing splendid work.

ALICE LEIGH.
(*Mrs. Southgate Leigh*).

The Woman's Auxiliary to the Post-Graduate Medical Society of Southern Virginia

Held a luncheon meeting on April the 17th, in Petersburg, the president, Mrs. E. J. Nixon, of that city, presiding. It was a pleasure to the Auxiliary to have with them Mrs. Francis W. Upshur, of Richmond, State president-elect, who told of the work being done by the Auxiliary to the Richmond Academy of Medicine, with the hope that it might suggest ideas for work by other auxiliaries. She suggested

that the Post-Graduate Auxiliary might join with the Auxiliary of the Richmond Academy of Medicine in some pilgrimage, as a means to raising money. The president appointed a committee to confer with a similar committee from the Richmond organization.

Mrs. Nixon stated that the Auxiliary was desirous of doing something worth while for the Petersburg Hospital, and read a list of articles needed by the hospital, this having been prepared upon request, by Miss Isabelle Simpson, superintendent of the hospital. Mrs. Nixon suggested that the Auxiliary should in a similar manner help the Hopewell Hospital—the only other hospital in its territory.

Following this, the business meeting was held and reports were received from the officers and chairmen of various committees. The Legislative Committe, Mrs. J. Bolling Jones, chairman, reported especial activity, due to the fact that they had assisted in medical matters before the General Assembly of Virginia.

The Auxiliary selected June the 1st as the date for entertaining the graduating class of the Petersburg Hospital.

It was decided that the next meeting of the Auxiliary, to be held in July, should be a picnic meeting.

The Woman's Auxiliary of the Norfolk County Medical Society

Held an executive meeting on April the 19th, with an excellent attendance. Several matters of importance were discussed. The Constitution and By-Laws were read and a committee was appointed to revise same and present their report to the meeting of the Auxiliary in June.

Immediately following this session, there was a meeting of the Auxiliary at which time reports from standing committees were given. It was stated that in April, the ladies had bought and presented the doctors with two very comfortable chairs for their new library in the Medical Arts Building.

The feature of this meeting was the talk by Miss Blanche Webb, director of the staff of nurses of the Children's Clinic of the Norfolk City Union of the King's Daughters, who told of the splendid work being done by that organization.

The Auxiliary will hold its next meeting in June.

The Truth About Medicine

In addition to the articles enumerated in our letter of February 25th, the following have been accepted:

Adohr Creamery Co.
B. Acidophilus Milk—Adohr.
Parke, Davis & Co.
Solution Ephedrine Sulphate—P. D. & Co., 3 per cent.

PROPAGANDA FOR REFORM.

Poliomyelitis Antistreptococcus Serum.—In cases of epidemic poliomyelitis that come under treatment after the paralysis is well established, the best that can be done is to give as good general medical and nursing care as possible. Cases have been described in which convalescent serum—serum from patients who have recovered from the acute symptoms of the disease—appears to have prevented the development of paralysis. The use of Rosenow's poliomyelitis antistreptococcus serum can be justified only as an experiment. The claims of Eli Lilly & Co. to the contrary notwithstanding, this serum so far has not been accepted as of such value as to warrant its general use. (Jour. A. M. A., December 10, 1927, p. 2061).

The Rectal Administration of Ether and Oil.—The Council on Pharmacy and Chemistry has authorized publication of a report prepared by R. A. Hatcher, on the Gwathmey Method of Anesthesia, concerning the rectal administration of ether and oil. Dr. Hatcher summarizes his report in part, thus: The admixture of ether with oil or liquid petrolatum constitutes an advance over other methods for the rectal or colonic administration of ether. Probably a mixture of equal volumes of ether and olive oil (or liquid petrolatum) is the most suitable for inducing anesthesia by rectal instillation after the subcutaneous injection of morphine. The method has certain advantages and also certain disadvantages. It shares with anesthesia by inhalation certain drawbacks. There is an urgent need of detailed statistical studies of accidents due to anesthesia conducted in various ways. The choice of an anesthetic and its mode of administration should be made with the same care with which one chooses other therapeutic agents in the treatment of disease, and the use of any method as a routine is irrational and dangerous. (Jour. A. M. A., December 17, 1927, p. 2114).

Progress in Obstetric Anesthesia and Analgesia.—For almost fifteen years, the method of Gwathmey, involving the rectal administration of ether and oil for anesthesia, has been before the profession. More recently the method has been combined with the subcutaneous injection of magnesium sulphate, particularly for use in obstetrics. Varying reports have appeared in medical literature as to the value of these procedures under such conditions as are encountered in the clinic, in the hospital and in private practice. It seemed desirable, therefore, for the Council on Pharmacy and Chemistry to prepare a statement of the present status of these methods. A survey of the literature indicates to Dr. Robert A. Hatcher that rectal or colonic oil-ether anesthesia has the advantage of sparing the respiratory passages, decreasing secretion in the respiratory tract, eliminating or alleviating the stage of excitement, lessening nausea and leaving clear the field for operations about the head and face. On the other hand, this manner of producing anesthesia is not under such perfect control as when anesthetics are given by the inhalation method. The chief use of

the synergistic method of Gwathmey has been in relieving the pains of delivery. The time is not ripe for such general and indiscriminate use of the method as will unfailingly be encouraged by commercial exploitation which has already been done. (Jour. A. M. A., December 17, 1927, p. 2118).

Oxygen by Injection.—Experiments to determine the value of administering oxygen intravenously, intraperitoneally and subcutaneously on dogs are reported. Theoretically the oxygen tension of arterial blood can be raised by intravenous injection of oxygen. Practically, however, the oxygen deficiency is accentuated when this point is reached. Results from subcutaneous injection were even less encouraging. There was, however, sufficient absorption from intraperitoneal injection of oxygen to justify clinical experiment with the method. It would be necessary to control the procedure by arterial puncture and blood-gas analysis. (Jour. A. M. A., December 17, 1927, p. 2120).

Pul-Bro-Tu, a Portland Fake Consumption Cure.—Newspapers and magazines all over the country are receiving a three-page typewritten communication on the stationery of the mayor's office at Portland. The letter is addressed to the council of the city of Portland, and it purports to be a final report relative to tuberculosis tests said to have been conducted by the board of health of Portland, in conjunction with other agencies and individuals, with a product put out by one George Kirkpatrick. While the tests were carried out on cows, the mayor states that "the medical fraternity should take immediate steps to apply the treatment through the medium of painstaking tests to the human family." Kirkpatrick is not a physician. He has been arrested at various times for violation of the Medical Practice Act. The preparation "Pul-Bro-Tu" has been on the market, it seems, for seventeen years, but it is only since Kirkpatrick received political backing that he has made any large noise in the field of quackery. The preparation was analyzed in the A. M. A. Chemical Laboratory in 1926, and was found to be a weak solution of potassium iodide and Fowler's solution. The nostrum has not the slightest value as a cure for tuberculosis; on the contrary, the danger of administering iodides to the tuberculous is well known. (Jour. A. M. A., December 17, 1927, p. 2121).

Youthray, Another Lead and Sulphur Hair Dye.—"Youthray," which, according to the label, "restores your youthful natural color to gray hair" and is "not a dye," is put on the market by the Ray Laboratories, Chicago. A booklet declares that "Youthray is entirely harmless" and is "unusually effective for ending dandruff" and for "promoting scalp and hair health." The A. M. A. Chemical Laboratory analyzed the preparation and reports that it belongs to the lead acetate and sulphur type of hair dye. While cosmetics do not come under the control of any federal law, the claims regarding dandruff and "hair health" and similar claims should bring the preparation within the jurisdiction of the federal authorities. (Jour. A. M. A., December 17, 1927, p. 2133).

Abramsism Abroad.—The fantastic hokum of Albert Abrams is practically a dead issue in the United States. It has been relegated in this country to obvious fakers, some osteopaths, and the occasional physician who suffers from an itching palm or a lack of scientific balance. The Abrams' fantastic hokum is now deluding the credulous in England, Canada and France. In Canada it has no support from the more responsible element of the medical profession. In France, the Abrams' nonsense seems to be mainly boosted by one Regnault. It is in England, however, that the E. R. A. has taken on its most amusing, or, should we say, its most tragic aspect. The chief exponent of the Abrams' cult in the British Isles is Sir James Barr, who was once president of the British Medical Association. Sir James seems to have swallowed Abrams' theories hook, line and sinker. (Jour. A. M. A., February 4, 1928, p. 401).

Sanarthrit and Telatuten Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Sanarthrit and Telatuten are products of Luitpold-Werk, Munich, Germany, distributed in the United States by East Brook, Inc., New York, claimed to be tissue preparations which owe their origin to Professor Ernst Heilner, of Munich. Sanarthrit is proposed for intravenous use as a "causal therapy of all forms of chronic arthritis." It is claimed to be "a specific substance of protein nature; the definite chemical composition is not yet cleared up"; it is "made from animal cartilaginous tissue and purified." The Council found Sanarthrit unacceptable for New and Nonofficial Remedies because the statement of its composition is vague and indefinite; because evidence is not offered to show that its composition is uniform; because it is marketed under a therapeutically suggestive, proprietary name and because the claims for its value are not supported by acceptable clinical evidence and are therefore unwarranted. According to the information furnished the Council by the Luitpold-Werk, Telatuten is stated to be "a specific substance of protein nature; the definite composition is not yet cleared up" and it is "made from the entire blood-vessel wall (intima, media, adventitia) of slaughtered animals, and purified." Telatuten is proposed as a "causal treatment of arteriosclerosis." The Council found Telatuten unacceptable for New and Nonofficial Remedies because its composition is indefinite and no evidence is offered to show that its uniformity is controlled; because it is marketed under a therapeutically suggestive, proprietary name; and because there is no acceptable evidence for its therapeutic value and efficacy, the claims made for its use being therefore unwarranted. (Jour. A. M. A., February 11, 1928, p. 463).

Asthma—Sera.—This is another iodide-containing asthma and hayfever nostrum. The statement "Asthma-Sera Ends Asthma and Hayfever Forever" appears on the stationery sent out by the R. M. B. Laboratories, Seattle, Washington. It does not appear on the trade packages which are subject to the control of the federal authorities which enforce the Federal Food and Drugs Act. Four bottles of Asthma-Sera "is considered a full treatment"; price, $10.50. However, the purchaser of four bottles is told that, if any symptoms of asthma remain when the first half of the fourth bottle is finished, he "should order two more bottles of Asthma-Sera *immediately*." The A. M. A. Chemical Laboratory analyzed Asthma-Sera and reports that it is essentially a solution containing 8.8 per cent strontium iodide, 0.43 per cent sodium iodide, and an emodin-bearing (laxative) drug. That iodides will be effective in certain forms of asthma is well known to every physician. Strontium iodide has no advantage over sodium or potassium iodide. (Jour. A. M. A., February 11, 1928, p. 480).

Joy Beans Quack Jailed.—Some time ago a fraud-order was issued against a quack, one Frank Beland, of Cairo, Ill. Beland exploited a piece of aphro-

disiac quackery under such trade names as "Joy Beans Laboratories" and "Beland Laboratories," selling a preparation that he called "Joy Beans." According to the government report "Joy Beans" were put up by Eli Lilly & Co. After trial, Beland received a jail sentence of ninety days. (Jour. A. M. A., February 11, 1928, p. 481).

Drugs Applied Through the Skin.—Certain drugs are absorbed by the skin, others not. Nonvolatile substances are not absorbed from aqueous solution. Such substances can be absorbed when applied to the skin in a fatty medium and with considerable friction. Bodies soluble in fat or fat solvents penetrate the skin more readily than water soluble substances. There is not great absorption, however. unless the substance is volatile. Volatile substances are much more readily absorbed through the skin and the degree of their absorbability is probably proportional to their volatility. (Jour. A. M. A., February 11, 1928, p. 481).

Prevention of Colds by Ultraviolet Radiation.—In 1926, Barenberg, Friedman and Green found that infants exposed to ultraviolet radiation improved in general health during the first month of treatment but contracted an increased number of colds during the second, third and fourth months. Accordingly, Maughan and Smiley attempted to administer a quantity of ultraviolet radiation equivalent to that to which the ordinary city dweller is exposed during the summer. They conclude that irradiation, resulted in a reduction in the frequency of colds. Barenberg and Lewis have completed further experiments in which over-radiation was guarded against. Their results were no better than before. On the one hand are well controlled experiments with negative results in which the dosage was large. On the other hand are imperfectly controlled experiments and success which the investigators attribute to low dosage. Positive statements, faith and investments may well await further evidence. (Jour. A. M. A., February 18, 1928, p. 547).

Refractoriness to Insulin.—There is a gradually increasing number of records of diabetic patients who seem to be resistant to the expected remedial action of insulin. In a recent case, a patient proved relatively refractory to insulin for some months, responded only to enormous doses, and slipped into coma or precoma as soon as these doses were reduced. Tests showed that the refractory condition was not due to an inhibitory substance—an anti-insulin—in the blood. The observers of this case are inclined to believe that the peculiar reactions shown by their patient can best be explained by assuming that the diabetes was not due exclusively to pancreatic insufficiency but to the lack of some substance other than insulin and equally necessary for the metabolism of carbohydrates. (Jour. A. M. A., February 18, 1928, p. 549)

More Misbranded Nostrums.—The following products have been the subject of prosecution by the Food, Drug and Insecticide Administration of the United States Department of Agriculture which enforces the Federal Food and Drugs Act: Depurativo Cacique (Francisco de Jesus) consisting essentially of mercuric chloride, potassium chloride, sodium sulphate, alcohol and water, with sarsaparilla flavoring. Protecto Spray (Salol Chemical Company) a solution in glycerine of carbolic acid, salicylic acid, boric acid and a trace of volatile oil. Reno's New Health Uterine Tonic (S. B. Leonardi and Company) containing extracts of vegetable material, including berberine, alcohol and water. Kentos (Kentos Laboratories, Inc.) consisting essentially of zinc sulphate, common salt and water, with traces of potassium chlorate and volatile oils. Vernas Lotion (Vernas Chemical Company) consisting essentially of zinc chloride (0.4 per cent), cassia oil, glycerine, alcohol and water, colored green. Sanagono (Liaju Company) a solution of alum, zinc sulphate and carbolic acid. White Diarrhea Remedy (Barnes Emulsion Company) a solution of iron (ferrous) sulphate in water. Sannette (Sannette Chemical Company) consisting essentialy of boric acid, alum and zinc salts, with a small amount of methyl salicylate, phenol and menthol. (Jour. A. M. A., February 18, 1928, p. 562).

Poliomyelitis Antistreptococcus Serum.—The Council on Pharmacy and Chemistry publishes a preliminary report on poliomyelitis antistreptococcus serum. The Council reports that the use of a specific antiserum in the treatment of poliomyelitis has been proposed; that a number of reports on the use of such a serum have been published; and that two commercial products, obtained by immunizing horses against strains of streptococcus from poliomyelitis patients, have been submitted to the Council. The Council reports that because of lack of adequate evidence, it had been decided not to accept any poliomyelitis anti-streptococcus serum until more positive evidence for its usefulness becomes available. (Jour. A. M. A., February 25, 1928, p. 617).

Book Announcements

The Ultra-Violet Rays. Their Action on Internal and Nervous Diseases and Use in Preventing Loss of Color and Falling of the Hair. By ARNOLD LORAND, M. D. (Vienna), Physician at the Carlsbad Springs, Czecho-Slovakia; Author of "Old Age Deferred," etc. Philadelphia. F. A. Davis Company, Publishers. 1928. Octavo of 258 pages. Cloth. Price $2.50.

The Healers. By B. LIBER, Author of "The Child and the Home," "As a Doctor Sees It," "Sexual Life"; Editor of Rational Living. Published by Rational Living, Post Office Station M, Box 2, New York City. 1928. Small Octavo of 455 pages. Price $3.00.

Studies in the Psychology of Sex. Volume VII. Eonism and Other Supplementary Studies. By HAVELOCK ELLIS. Philadelphia. F. A. Davis Company, Publishers. 1928. Octavo of 539 pages. Cloth. Price $5.00.

Chiropractic. The Great American Joke. By CHAS. W. WARNER, Jackson, Miss. Pamphlet of 15 pages. Paper. Price, single copies by mail postpaid, 20 cents. Ten or more copies by mail, post, paid, each 10 cents.

New Abbott—D. R. L.—Milliken Price List. Attractively designed and printed in attractive colors. 176 pages. May be obtained free by addressing the Abbott Laboratories, North Chicago, Ill.

Certified Milk. Proceedings of the American Association of Medical Milk Commissions, Inc.; Certified Milk Producers' Association of America, Inc.; California Medical Milk Commissions, and the Metropolitan Certified Milk Producers, Inc., with the Certified Milk Producers' Association of America, Inc.; Constitution and By-Laws of the American Association of Medical Milk Commissions, Inc.; Methods and Standards for the Production of Certified Milk. 8vo. of 322 pages. Cloth.

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Editorial

Sudden Death by Heart Failure.

Little study is needed to prove the truth of the assertion that sudden death (unexpected and unlooked-for death) by immediate heart failure, is very common in the present-day death roll. Death from slow but persistent failure of the heart, characterized by days, months and even years, of more or less distressing heart symptoms, comes oftentimes, as a relief to the harassed patients. Under the skilful management of the physician, many of these cases of heart disease go from one attack of decompensation to another, from dropsical, edematous, dyspnoeic symptoms to states of comparative comfort. When finally, as remedies and protective measures no longer correct the faults of pathologic functions or eliminate the accumulation of incompetent circulation, the heart reserve is brought to a minimum and the organ can no longer carry on, death is indeed quite welcome. During such a period of harassing and gradual heart failure the compensations of mental adjustment are acquired and the sting of death is somewhat lost. But not so with death from heart disease that has existed undetected. While, to the patient, such a death is devoid of mental and physical distress, there are several cogent reasons why the frequency of such a death is ignominious and unworthy of the day in which we live—with its large knowledge of heart pathology and disease.

For instance, sudden death from heart disease may come by embolus. This may occur in the course of or following upon a siege of rheumatic endocarditis. This complication of certain types of endocarditis, with a long train of antecedent symptoms, is one that physicians must keep in mind. The precaution of forewarning attendants at the bedside and the family of such patient of the possibility of such a sudden ending of the case, is a wise one. The admonition of the possibility of such a calamity somewhat prepares friends and relatives and, at the same time, imbues them with the belief that the attendant understands the ways of the disease. To be a "wiseacre" at foretelling the probable death of patients is conceit that does not become the real doctor or physician, but to be on the alert and to tell those who have a right to know what is the usual or ordinary course of the disease under treatment, is the proper function and duty of the attendant physician.

Sudden death may likewise be met with in angina pectoris and coronary thrombus. In cases of hypertension-hearts, or in cases of syphilitic aortitis, one may always keep foremost in mind the treacherous uncertainty of prognosis; remembering that sudden and unexpected death may occur without warning or during an attack. The seriousness or severity of the attack of pain, unfortunately, may not be relied upon to serve as a guide in forming an opinion of the occurrence of death. The anginal syndrome may apparently be least frequent; the heart, under the test of usual physical examination, may appear to be functioning as well as ever and even better, and yet sudden death may occur. So in such cases one must feel a sense of apprehension even in the face of an improvement of symptoms, or an infrequency of pain syndrome. In angina pectoris, years may be added to heart-longevity under certain conditions of care and management. The experience of years has borne this out, and it is this factor of increasing length of years that the treatment of heart disease has to offer.

But sudden death of the supposedly healthy, active, energetic, business man, more or less "feeling well," is the most lamentable of present day catastrophies. The newspapers, more or less, teem with glaring head-lines saying that prominent citizen, (so and so), died suddenly last night, from an attack of acute in-

digestion, or while at business, or on the golf links, or while enjoying social pleasures. It is this sort of competent person of present business that seems to be the most frequent victim of this modern premature death. There must be something in the mental make-up of such men that brings about this condition. No doubt the roving, active business life with its successes and victories, tends to bring about a state of mind of self-sufficiency. It tends, also, to put to a lesser place of importance the physical make-up; it tends to set aside for a more convenient time an appraisal of the physical assets and liabilities of the body. Then too, it is probable that such men, full of the urge of business success and ambition to do more, will not give an ear to a warning from the physician; they discount what the doctor says to them, thinking that he has overdrawn the picture in order to "make the sale" of his idea. Physicians frequently warn of and foretell the disaster but the warning falls on unbelieving ears. Then, too, it is feared that examinations are sometimes not thorough enough to detect or bring to the mind of the physician himself the possible pit-falls of the cardiac malady discovered. Not infrequently, the physician may be hurried, may be tired, may be unappreciative of the possible behavior of the defective organs, under conditions of ordinary life, and, in this manner, or for these reasons, may fail to take the stand of adequately impressing the patient of dangers ahead.

The apparent increase of sudden deaths seems to warrant thoughts along the lines of prevention. A record of prevention of the occurrence of the unexpected sudden death is one much to be sought for through more careful prognostication of cases and the instillation of measures for prevention.

The Higher Standards of Medical Education of Today.

Medical education in America in the past twenty-five years has attained high standards, both as to essential requirements in candidates seeking medical education and as to the quality of the graduates. This epoch has been noteworthy because of the extraordinary success of the campaign of reform in medical education, led by the American Medical Association. While in 1900, standards of education in medicine in America were much inferior to those of England, Germany and France, today it may be affirmed that America holds a place of equality in this group of countries in the matter of its medical education. It may be true that there are differences in the excellence of the product. However the American university, in its medical department, turns out a most creditable graduate.

In this quarter of a century, when many new ideals of medical organization and medical teaching were advocated and put in practice, necessarily, there crept into the general scheme arrangements and ventures appearing as ideals to be excellent, some of which have not proven to be workable or desirable. The great victory of high standards of medical education was reached by marking medical schools in the following manner:

1. Showing of graduates before State Boards.
2. Requirements of preliminary education and its enforcement.
3. Character of medical curriculum.
4. Medical school plant.
5. Laboratory facilities and instruction.
6. Dispensary facilities and instruction.
7. Hospital facilities and instruction.
8. Extent to which the first two years are offered by men devoting tutors' time to teaching, and also evidence of original research.
9. Extent to which school is conducted for the profit of the faculty directly or indirectly, rather than for the teaching of medicine.
10. Libraries, museums, charts, and teaching equipment.

By this standard, medical schools of the country have been judged. These requirements, applied over a quarter of a century, have brought about salutary situations in medical education in the United States.

As to the future requirements of medical education in America, Dr. Bevan, *J. A. M. A.*, April 14, 1928, gives interesting thoughts from a rich experience.

An Appreciation.

The enactment by the last General Assembly of Virginia of new laws governing medical practice in Virginia, as well as other important legislation affecting the life and health of the people of Virginia, is an occasion of much importance in the history of this State. Each step forward, taken by legislative bodies, to bring to the citizenry greater security against disease and quackery, is worthy of keenest appreciation by all. The professional medical men who have taken part in this welfare movement can hardly be too greatly thanked. It is

not to be expected from the laity that much appreciation of their efforts will come, but it is certain that the members of the medical profession who have a keen sense of responsibility for the general welfare of the life and health of the public and who labor, in season and out, in many ways to conserve the health of the people and to prevent the spread and progress of disease, keenly appreciate the efforts of those members of the medical profession who by their fitness and selection, were able to render this big service to the State of Virginia.

It is to emphasize again this appreciation and credit for this splendid piece of salutary legislation, that the VIRGINIA MEDICAL MONTHLY draws attention to the names of men most active in bringing about this creditable legislation. The work started with the Committee appointed to make a report at our 1927 annual meeting on Amendments and Changes in our Medical Practice Act. This Committee was composed of Dr. J. W. Preston, chairman, Dr. A. L. Gray, Dr. T. S. Hening, Dr. Lawrence T. Price, Dr. P. St. L. Moncure, Dr. J. Bolling Jones, Dr. J. Shelton Horsley, Dr. H. U. Stephenson, and Dr. J. Allison Hodges.

When Legislature convened, this bill was turned over to the Public Policy and Public Health Committee, composed of Dr. L. T. Price, Chairman, Dr. H. U. Stephenson, Dr. P. St. L. Moncure, Dr. J. M. Emmett, and Dr. E. G. Williams, that they might have it considered by the General Assembly. In the work for the passage of this and other medical bills, these men were ably assisted by the following doctors in the General Assembly: Dr. E. L. Kendig and Dr. J. B. Woodson in the Senate, and Drs. J. T. Graham, J. Lewis Harvey, Dr. Wm. D. Prince, Dr. H. T. Smith, and Dr. J. W. Witten in the House.

In the name of the Medical Society of Virginia, we thank all of these men as well as the ones back home who gave able assistance upon every call.

A. G. B., JR.

The New Medical Practice Act Again.

The passage of House Bill No. 199 by the General Assembly of Virginia at its 1928 session was discussed editorially in the last issue of the Journal. It was pointed out that this law places on the statute books of this Commonwealth an act which, if properly enforced, will adequately safeguard from a medical practice standpoint the health and well-being of the people of the state. Attention was called also to the good work of the patron of this bill and the president of the Medical Society of Virginia and his committees in helping to bring about the enactment of this meritorious law. Too much credit cannot be given Dr. Preston and his associates for their untiring and successful advocacy of this legislative measure. In addition to the officers and legislative committees of the State Society, there are others of the profession also whose good work connected with the passage of this act should be recognized. Reference is made to the physicians, who were members of the last General Assembly. Each one of them took an active interest in all matters pertaining to the medical profession coming before the Legislature and they were in a position to do effective work along these lines.

Committees and individuals, not members of the General Assembly, can organize and do good work in securing the passage of a bill, but they do not have a voice in the committees when in the executive sessions, or on the floor of either House or Senate. The personal relationship existing between members of the General Assembly gives to a member of that body an influence and knowledge in shaping and determining legislation not possessed by an outsider.

It was in the executive session of these committees, it was on the floor of the House and Senate, it was through a personal influence with the members that the physicians, who were members of the last General Assembly, did valuable and effective work in the passage of House Bill 199. It is a rule of the General Assembly that only those connected officially with the work of the Legislature and those with special permits are allowed on the floor of the House or Senate when in session. These physician members were active in getting permits on the floor for the committees and friends interested in the Medical Practice Act. In fact, permission was obtained giving practically all the friends of House Bill 199 permits to come on the floor while it was under consideration.

These physicians in the Legislature manifested the same active and effective interest when the repeal of the pernicious poropathy act and the defeat of the Birrell chiropractor bill were accomplished by the General Assembly.

Dr. J. B. Woodson, of Nelson, Dr. John T. Graham, of Wythe, Dr. Lewis J. Harvey, of

Floyd, Dr. William D. Prince, of Sussex, Dr. H. T. Smith, of Grayson, and Dr. J. W. Witten, of Tazewell, were members of the last Virginia Legislature. They made a considerable sacrifice when they left their work and gave two months' time to the session of the General Assembly. They contributed considerably to the enactment of the Medical Practice legislation and their efforts will be appreciated by those interested in these measures.

E. L. K.

News Notes

Danville Meeting, Medical Society of Virginia.

For the first time in many years, the Medical Society of Virginia is to meet in Danville. The dates are October 16. 17 and 18, and we hope all members of the Society will reserve part of their vacations to be spent at this meeting. Our president this year is Dr. J. W. Preston, of Roanoke, Va. Members of the local committee of arrangements were named in the April issue of this journal. If there is any special information desired about the meeting, and you cannot locate your copy of the Monthly, inquiries may be sent to the general chairman, Dr. I. C. Harrison, Danville, Va., or to the Society's offices in Richmond.

Dr. Preston announces that he has had acceptances from Dr. Dean Lewis, of Baltimore, and Dr. E. Starr Judd, of Rochester, Minn., to be our guests for this occasion and to present addresses. Other speakers will be announced later. You cannot afford to miss this meeting. Begin making your plans now to be there.

Spring Graduate Seminar of the School of Medicine, Medical College of Virginia.

Purpose.—This graduate seminar is designed to serve busy practitioners of medicine by offering a brief sequential course of instruction in medicine, pediatrics, obstetrics, and surgery. As contemplated for several years, it will be started at the request of numerous members of the profession.

Plan.—The work will begin at nine o'clock daily, run to twelve, and from two to five. Following the day's work an open forum will be conducted at which questions growing out of this work and submitted by those attending the seminar will be given free discussion. The six hours of the first day will be given to vital subjects in medicine, three hours the second day to pediatrics and three hours to obstetrics, and six hours the third day to surgery. A detailed outline of the work will be available later. Each person attending the seminar will be provided with an ample outline of the work, including bibliographies. This will make subsequent study convenient.

Date.—The date for the seminar, May 24-26, falls immediately ahead of the beginning of the college commencement, which starts on Saturday night, May 26. During the seminar period no regular college classes will be in session although a number of students will still be taking final examinations.

Cost.—To cover the cost of study outlines, special laboratory and clinical material and incidental expenses, a fee for the three-day seminar if $10 will be charged. Should there be any unexpended balance, it will be held intact for the use of the seminar the year following.

The Committee.—The seminar committee, composed of Dr. William B. Porter, chairman, Dr. A. L. Gray, Dr. Wyndham B. Blanton, Dr. Greer Baughman, Dr. W. L. Peple, Dr. C. C. Haskell, and Dr. Manfred Call, dean of the school of medicine, will be pleased to have suggestions for the conduct of this first seminar. These should be addressed to the chairman of the committee.

The American Medical Association

Has issued call for its seventy-ninth annual meeting to be held in Minneapolis, Minn., June the 11th to 15th, inclusive. The House of Delegates will convene on Monday, the 11th, and the scientific assembly will open with the general meeting on the following evening at 8:30. Dr. Jabez N. Jackson, Kansas City, Mo., is president. *The Journal of the A. M. A.* has published a list of Minneapolis hotels, with rates. Those having trouble in arranging for accommodations might communicate with Dr. F. G. Benn, 1114 Donaldson Bldg., Minneapolis, chairman of the sub-committee on Hotels of the Local Committee of Arrangements.

There will be a special train over the Chicago Great Western railroad from Chicago to Minneapolis on Sunday night, June 10th, for the exclusive use of members of the A. M. A. and their families. This gives an opportunity to meet and visit with friends on the train. Reservations on this special train should be made at once. For information about trains from Chicago to Minneapolis, write R. A.

Bishop, General Passenger Agent, Chicago Great Western R. R., 122 South Michigan Boulevard, Chicago, Ill.

Virginia has three delegates in the House of Delegates this year: Dr. Southgate Leigh, Norfolk; Dr. J. W. Preston, Roanoke; and Dr. Murat Willis, Richmond.

Report Regarding National Leper Home.

Surgeon General Cumming, of the Public Health Service, has recently submitted to Congress an interesting report relating to the National Leper Home, located at Carville, La. During the past year fifty-six lepers were admitted to this hospital; twelve were readmitted and two patients were discharged on parole, as their leprosy was arrested, and considered no longer a menace to public health. Seventeen deaths occurred during the year at this hospital.

As to nativity, the patients come from twenty States and three of the insular possessions of the United States. Persons are also patients in the hospital from twenty-four foreign countries. Louisiana, Florida and Texas lead the States furnishing patients to the National Leper Home. At present 278 patients are under treatment there. Practically all of these patients are receiving chaulmoogra oil, which seems to be the most beneficial drug in the treatment of leprosy. It is administered in some cases by mouth in doses ranging from three drops to 300 drops daily. Some of the patients receive intramuscular injections of this oil, a painless method for these injections having been discovered by the Public Health Service.

Recognizing the great importance of occupation to prevent morbid introspection, paid employment is offered patients physically and mentally fit to work at light tasks, to the profit of both patients and hospital. Daily routine occupation is thus supplied to one-third of the total population of the hospital.

A small golf course has been started on the patients' campus, and a surprisingly large number of enthusiastic players has developed. A concrete tennis court has also been constructed for the patients.

Post-Graduate Clinics at the University of Virginia.

The post-graduate clinics held at the University of Virginia for three days, the middle of April, were attended by seventy-one doctors from all sections of Virginia and by several from outside the State. This is the third post-graduate clinic that has been held by the University Hospital and there has been a steady growth in attendance each time.

Clinics were conducted by: Dr. D. C. Smith on the treatment of syphilis; Dr. Allen F. Voshell on the management of fractures of the wrist; Dr. William E. Bray on serum and vaccine therapy; Dr. J. Edwin Wood on the treatment of cardiac failure; Dr. J. H. Neff on the treatment of gonorrhea in the male; Dr. William W. Waddell on feeding the normal infant; Dr. W. E. Brown on post-sanatorium care of tuberculosis; Dr. C. Bruce Morton on minor surgery, Dr. Staige D. Blackford on the treatment of anemia; Dr. Fletcher D. Woodward on procedures in nose and throat practice; and Dr. J. A. Waddell on useful new drugs. Round table discussions were held on topics furnished by those attending the clinic. On the first evening, the visitors upon invitation, attended the annual initiation of the Alpha Omega Alpha honorary medical fraternity upon which occasion, Dr. Edwin A. Alderman delivered an address.

Among the doctors attending the clinic were Drs. W. O. Smith, Alta Vista; Frances L. Thurman, Buena Vista; C. D. Bennett, Chatham; Charles A. Easley, Chatham; J. W. Wallace, Covington; H. McCoy, Crozet; H. T. Chelf, Culpeper; Granville Eastham, Culpeper; L. E. Fuller, R. F. D., Danville; B. F. Randolph, Evington; M. Edmond, Eagle Rock; B. A. Rice, Forest; D. M. Kipps, Front Royal; N. L. Kabler, Forest; R. L. Raiford, Franklin; Robert F. Jones, U. S. Navy; John E. Cole and C. Mason Smith, Fredericksburg; H. L. Baptist, Ivy; B. L. Carleton, J. C. Cutler, and E. R. Martin, Newport News; B. A. Pope; Newsoms; C. C. Page, Orange; W. W. Butler, Roanoke; E. W. Ross, Sugar Grove; Percy Harris, Scottsville; J. J. Waff, Shenandoah; G. R. Joyner, J. L. Rawls and F. A. Ward, Suffolk; C. A. Broaddus, Ruhlgrin; M. T. McCulloch, Troutville; J. A. Owen, Turbeville; G. O. Emerson, Wenonda; H. A. Latane, Alexandria; J. D. Miller, Bridgewater; W. D. Macon, M. L. Rea, T. H. Daniel, and J. C. Coulter, Charlottesville; R. W. Garnett, J. J. Neal and W. B. Fowlkes, Danville; J. F. Thaxton, Tye River; J. G. Brown, Woodville; L. H. Hoover, Clarksville; W. A. Kyger, Nortonsville; J. Bolling Jones, Petersburg; J. N. Clore, Madison; K. F. Woodward, New York City; Knowlton Redfield, Roanoke; J. S. Bradberry, North Carolina; Paul B.

Barringer, University; J. O. Mundy, Barboursville; J. C. King, Radford; F. P. Barrow, II, Portsmouth; J. R. Shacklette, Elkton; M. F. Woodward, Richmond; T. W. Sims, Eheart; R. A. Warren, Hot Springs; J. C. Everett, Nellysford; R. L. Page, Batesville; F. M. Perrow and Thomas E. Jones, Lynchburg; W. M. Thompson, Stevensburg; E. W. Davis, and J. C. Harshbarger, Harrisonburg; J. Powell Williams, Richmond; and T. P. Haney, Jr., Iuka, Miss.

Urban and Rural Infant-Mortality Rates in 1925.

The U. S. Bureau of the Census reports that the infant-mortality rate for cities in 33 States and the District of Columbia, which formed the birth-registration area in 1925, was nearly three points higher than for the rural area—that is, the city rate was 73 per 1,000 live births as compared with 70.3 for the rural areas.

When Infantile Paralysis is Epidemic.

Dr. Charles H. Mayo says that it is futile to attempt to run away from infantile paralysis after the epidemic begins, because recent experiments have shown that at such a time the germs of the disease exist in the throats of almost all children and of many adults, most of whom never show any signs of the sickness. "The best thing to do," he says, "is to remain at home, guard the children against overfatigue and indiscretions of diet, give them a little extra rest during the day, and watch their temperature."

Dr. W. R. Weisiger,

Richmond, Va., has returned home after a visit to New York, where he went to attend the reunion dinner of the Society of Ex-House Surgeons of the Manhattan Eye, Ear and Throat Hospital.

Early Diagnosis Campaign.

In connection with the "Early Diagnosis Campaign" for tuberculosis which has been held all over the country during March and April, the statement was made that it is estimated that there are 270,000 active but unknown and undiagnosed cases of tuberculosis in this country. This is why the campaign was put on, and a large number of people took advantage of the free examinations.

This early diagnosis work was made possible by the sale of Christmas seals, in view of which it is interesting to note that the amounts received for the past three years have been $55,856.36 for 1925; $57,350.14 for 1926; and $58,879.85 for 1927—a slight increase each year. These sales will help greatly in stamping out the white plague in our State and throughout the country.

Although the campaign is nominally over, the Virginia Tuberculosis Association, 511 Atlantic Life Building, Richmond, Va., will gladly arrange other public or private clinics upon request.

Dr. T. Paul Haney,

Of the class of '26, University of Virginia, Department of Medicine, after an internship at the University of Virginia Hospital, has accepted the position of full time county health officer of Tishomingo County, Miss., and has just left for his post of duty. He will be located at Iuka, Miss.

The Virginia State Dental Association

Will hold its fifty-ninth annual meeting in Roanoke, Va., May 29, 30 and 31, with headquarters at Hotel Patrick Henry. Members of the medical profession are always welcome at these sessions. Dr. W. G. Delp, Rural Retreat, is this year's president; Dr. R. C. Walden, Richmond, president-elect; and Dr. A. M. Wash, of the Medical College of Virginia, Richmond, secretary-treasurer.

The Accomack-Northampton Hospital,

Located at Nassawadox, Northampton County, Virginia, is to be opened during the summer. While the date has not been set definitely, it is expected that it will be sometime in July.

Italy Is Investigating Infant Feeding.

Prefects throughout Italy have been directed by the Minister of the Interior to obtain data on the prevalent methods of feeding infants. Physicians filling out certificates of infant deaths or of vaccination must report on the methods of feeding used for the child. Since vaccination is required by law within the first year of life, these combined reports should give data concerning the feeding of every infant born in Italy.

Italy Plans for Physical Education of Its Children.

Italy has placed the physical education of children in elementary and private schools under its recently established National Bureau of Physical and Moral Education, for which a royal decree provides an annual appropriation of 10,000,000 lire beginning with the fiscal year 1928-29. The establishment under the

bureau of normal schools for training teachers of physical education is authorized, and 400 applications have already been received for admission to the first school, which is to be established in Rome.

Appointed on State Board of Medical Examiners.

On nomination made by the Executive Council of the Medical Society of Virginia, Governor Byrd in April appointed Dr. Alexander F. Robertson, Jr., as a member of the State Board of Medical Examiners to fill the vacancy caused by the death of Dr. Robert Glasgow, for the unexpired term of four years ending April 1, 1930.

Dr. T. C. Harris,

After practicing for several years at East Radford, Va., has located in Centralia, Va., where he will continue the practice of his profession.

Dr. John R. Guerrant,

Of Wirtz, Va., after a visit in Richmond, Va., has gone to Salt Lake City, Utah, for the summer.

Child Marriage and the Age of Consent in India.

A bill raising the age of consent in India for unmarried girls to 16 and for married girls to 14 (the present ages being 14 and 13, respectively) has been under consideration by the Indian Government, which has recently decided to appoint a committee to investigate the whole subject of the age of consent and child marriage.

Dr. Vincent W. Archer,

University, Va., left the latter part of April for Rochester, Minn., where he will spend several weeks in X-ray work at the Mayo Clinic.

Dr. Edgar M. McPeak,

Of the class of '25, University of Virginia, Department of Medicine, has located in Washington, D. C., where he will be associated with Drs. Groover, Christie and Merritt, at 1909 Massachusetts Avenue, Northwest.

Dr. W. B. Cannon,

For sometime of Norfolk, Va., is now in Carthage, Mo., where he is convalescing from a prolonged illness.

The Maltbie Chemical Company Establishes a Resereach Fellowship.

Announcement has been made that the Maltbie Chemical Company of Newark, New Jersey, has contributed a grant for a research fellowship for the coming year to the Department of Chemistry of Princeton University.

The research work to be done under this fellowship will be fundamental in character and will cover certain phases of the chemistry of creosote and creosote compounds.

The establishment of this research fellowship is in line with the policy of the Maltbie Chemical Company to extend its research activities and to contribute to a study of the chemistry of important drugs.

Eugene Field Foundation for the Relief of Crippled Children.

This foundation was recently organized in St. Louis to raise $100,000 to meet the emergency caused by the exhaustion of the State appropriation for the care of crippled children. Ninety days after this work was begun at the University of Missouri last July, thirty-six children had been admitted from eighteen counties, and the hospital space was exhausted with four-fifths of the counties still to be heard from. The foundation is to include representative persons from all parts of Missouri and will aim to secure hospital care and education for indigent crippled children, provide appliances, and maintain hospital wards.

Dr. J. V. Jordan,

Covington, Va., returned home the latter part of April, from Canada, where he was called on account of the illness of his mother.

Dr. J. H. Crouch,

Recently with the Health Department of Fort Worth, Texas, has accepted the position of State Epidemiologist of Montana, and is making his headquarters at Helena, Mont. Dr. Crouch was formerly in charge of one of the health units under the Virginia State Board of Health.

Census of State Hospitals for Mental Diseases.

A preliminary report of the Department of Commerce states that 161 out of 165 state and federal hospitals for mental diseases reported 52,591 first admissions for the year 1926 as compared with 50,467 first admissions in 1922 for the full number of 165 hospitals. In the country as a whole, the number of mental patients under institutional care shows a steady increase, the number of mental patients under institutional care on January 1, 1910, being 159,096 as compared with 250,890 on January 1, 1927. The proportionate increase for the states with complete returns in 1926 was from 176.2 per 100,000 general population on January 1, 1910, to 219.1 on January 1, 1927. On

January 1, 1927, there were 5,603 patients in the four Virginia State hospitals, there having been a small steady increase each year.

Care of the Blind in Canada.

The Canadian National Institute for the Blind, a voluntary Dominion-wide organization created in 1918, has expended nearly $1,800,000 on behalf of the blind in Canada, about half of the amount coming from Government grants. It co-operates with the Canadian Council on Child Welfare and other agencies in efforts to obtain legislation by the Provinces for the prevention of blindness, preventive work in the schools, and the education of the juvenile blind. Canada now has five schools for the blind under provincial jurisdiction which, except the one in Quebec, provide free tuition and maintenance. Together, the five schools make provision for children from all the Provinces.

The Southern Society for Clinical Surgeons,

Which held its second annual meeting in St. Louis, Mo., in April, elected the following officers: President, Dr. J. A. Crisler, Jr. Memphis, Tenn.; vice-president, Dr. John C. Burch, Nashville, Tenn.; and Dr. John S. Horsley, Jr., re-elected secretary-treasurer. Dr. Carrington Williams, also of Richmond, was elected a member of the council of the Society.

Some Figures From Bureau of Vital Statistics.

To January 10, 1928, there had been reported 57,330 living births in Virginia for 1927, a total of just thirty-six more than for 1926. Of this number, 39,689 were reported by physicians, and 16,955 by midwives, while friends or the family reported the balance.

Accidental deaths claiming the largest numbers were automobile deaths, 12 per 100,000; burns 11.1; railroad accidents 5.5, and drownings 4.8.

It was stated that burns are the most important of all accidental deaths of children. Nearly 59 per cent of deaths from burns in 1926 were of children under fourteen years of age, the bulk of these being of children under five years of age.

In view of the number of deaths from drowning, it is suggested that all children should have the opportunity of bathing and learning to swim under safe supervision.

Dr. D. Hunter Marrow

Has returned to his home at Union Level, Va., after spending the winter at Daytona Beach, Fla., as is his custom.

"Sight-Saving" Classes in Public Schools.

At the beginning of 1927 Massachusetts had in its public schools twenty-eight sight-saving classes for children with defective sight. These were distributed in fourteen cities, and four more cities were making arrangements to open classes. The division of the blind of the State department of education grants $500 yearly to each class and supplies every new class with $250 worth of equipment. In the whole United States there are some 290 sight-saving classes.

Portugal Strengthens Its Child Labor Laws.

A decree put into effect in Portugal toward the end of 1927 amended the previous laws by providing that no boy under sixteen nor girl under eighteen may be employed without a physician's certificate of physical fitness and proof of ability to read and write. The minimum age for employment was fixed at twelve, children between this age and fourteen being permitted to work not more than six hours a day with one or more rest periods, and children between fourteen and sixteen not more than seven hours. Sunday work is prohibited to boys under sixteen and girls under eighteen, and no child under sixteen may be employed in acrobatic performances, in work underground, or on night work. In work underground and night work, which are also prohibited to women, certain exceptions are permitted in emergencies and in temporary work on perishable material.

Some Delegates to the State Democratic Convention.

Reports from several counties show the following doctors among the delegates elected to the State Democratic convention to be held in Roanoke, Va., June 21: *Isle of Wight*, Dr. R. Lee Seward; *Southampton*, Drs. S. J. Railey and W. T. McLemore; *Petersburg City*, Dr. W. A. Reese; *Mecklenburg*, Dr. B. J. Montgomery; *Amherst*, Drs. G. T. Harris and E. M. Sandidge.

Dr. E. N. Lillard,

After recuperating at his former home at Graves Mill, Va., has located at Brandy, Va., where he is engaged in general practice.

Addition to St. Elizabeth's Hospital.

It is announced that the building at 613 West Grace Street, this city, which has been used as one of the nurses' homes of St. Elizabeth's Hospital, will be turned into an annex

of the hospital. The building at 609 West Grace has recently been purchased and will be made into a large nurses' home.

It is interesting to learn that a radio service with ear phone connections has recently been installed in this hospital. As there is no loud speaker, the service is devoid of noise.

Dr. Preston Parks,

For sometime of Parksley, Va., has moved to Wilmington, N. C., and has offices in Murchison Building, that city.

The Virginia Section, Society American Bacteriologists,

Held its annual meeting in Richmond, April the 3rd and 4th, Dr. Frederick M. Shaw, of the Medical College of Virginia, presiding. Several interesting papers were presented. The following officers were elected for the ensuing year: Chairman, Mr. Aubrey H. Straus, Richmond; vice-chairman, Mr. W. F. Lawrence, Portsmouth; secretary-treasurer, Mr. J. G. Wahlin, Richmond. The Committee on Arrangements to take care of the National Meeting of the Society of American Bacteriologists in Richmond, December 27-29, 1928, is composed of: Mr. L. C. Bird, chairman, Mr. Aubrey H. Straus, and Drs. Regena Beck and E. C. L. Miller.

The Playtime of Schoolboys of Newark.

The Rotary Club of Newark, N. J., made an effort last year to find out how the school boys of that city amused themselves out of school. It got reports for nearly 28,000 boys of eight to seventeen years who were attending the city's public and parochial schools. More than half of them went to the "movies" once a week, nearly 6,000 went twice a week, and most of the others two or three times a month. For a majority of the boys the streets were the playgrounds, and one in nine belonged to some self-organized gang. Only one boy in five was under the influence of a church or other organization doing social work for boys. Better recreational opportunities and vocational guidance for continuation-school boys of fourteen and fifteen were especially recommended.

A "Melting Pot" for Little Foreigners.

The Morgan Memorial Day Nursery, located in the heart of Boston's foreign section, during 1927 cared for ninety-nine children from seventy families of nineteen different nationalities.

The Virginia Society of Oto-Laryngology and Ophthalmology

Held its ninth annual meeting in Newport News, Va., under the presidency of Dr. C. S. Dodd, of Petersburg. The meeting was in every way a success, there being an attendance of sixty-nine. Dr. James N. Greear, of Washington, D. C., and Dr. Samuel Skillern, of Philadelphia, invited guests, presented interesting papers in addition to several by members. Luncheon was held at Hotel Warwick. Dr. Frank Hanger, Staunton, was elected president; Dr. James Morrison, Lynchburg, vice-president; and Dr. Fletcher D. Woodward, University, was re-elected secretary-treasurer. The next meeting will be held at Staunton, Va., in May, 1929.

The Medical Association of the Valley of Virginia

Will hold its regular semi-annual meeting at the Nurses' Home of Rockingham Memorial Hospital, Harrisonburg, Va., May 31, the first session being at 11 A. M. A number of interesting papers are listed on the program including one by invited guest, Dr. Thomas McCrae, of Philadelphia. Luncheon will be served in the intermission between the morning and afternoon sessions. Officers of the Society are: Dr. C. O. Dearmont, White Post, president; Drs. L. M. Allen, Winchester, and H. G. Middlekauff, Weyers Cave, vice-presidents; Dr. L. F. Hansbrough, Front Royal, treasurer, and Dr. Allen T. Hawthorne, Winchester, secretary.

Dr. and Mrs. E. T. Hargrave,

Norfolk, Va., passed through Richmond, the latter part of April, on a motor trip to Charlottesville and through the Valley of Virginia.

Dr. John W. Devine,

Lynchburg, Va., announces that in the future his practice will be limited to general surgery. He has offices at 610 Church Street, that city.

Higher Compensation for Child Injured While Illegally Employed.

A boy of fifteen lost his arm in a Cleveland factory while he was working in violation of three provisions of the child labor law, being under sixteen and working at night on a dangerous machine without an employment certificate. The Industrial Commission of Ohio granted him 50 per cent additional compensation over the regular workmen's compensation for this type of injury, for the first time apply-

ing to a violation of the child labor law the provision of the constitutional amendment of 1924 empowering the commission to grant additional compensation up to 50 per cent in cases of injury shown to be due to "the failure of the employer to comply with any specific requirement for the protection of the lives, health, or safety of employees enacted by the General Assembly."

Married.

Dr. Raymond DeVan Kimbrough, of the class of '24, University of Virginia, Department of Medicine, and Miss Janet Haldane Coleman, Williamsburg, Va., May 5.

Dr. and Mrs. W. J. Wigington,

Of Java, Va., have recently returned from a visit to Miami, Fla.

Heads Rotary Club.

Dr. Francis Lee Thurman has been elected president of the Buena Vista, Va., Rotary Club, for the year beginning July 1.

Dr. A. B. Siewers,

Formerly of Richmond, Va., and a member of the class of '18, Medical College of Virginia, but now of Syracuse, N. Y., has received a fellowship in the Child Guidance Clinic at Cleveland, Ohio, upon completion of which he will return to his practice in Syracuse.

The West Virginia State Medical Association

Will hold its annual meeting at Fairmont, W. Va., May 22-24, under the presidency of Dr. C. A. Ray, of Charleston. An excellent program has been arranged and the usual good time will be had by those who attend.

For Sale—

Valley of Virginia $7,000.00 general practice, in growing town of 1,200 people, for price of modern residence. Competition right. Apply "X. Y. Z.", care Virginia Medical Monthly. (Adv.)

Wanted—

To rent at once, well-equipped office and furnished home, for six months, in a city which promises excellent permanent location. Address "A. W.", care the Virginia Medical Monthly. (Adv.)

Wanted—

Eye, Ear, Nose and Throat specialist for association with established group located in best part of the South. Only high class, experienced man, good appearance and pleasant personality, who is willing to work hard and cooperate with group need apply. Salary increased if makes good. Southern man preferred. Give age, training and experience in first letter. Wonderful opportunity for the right man. All communications will be held confidential. Address "No. 120", care Virginia Medical Monthly. (Adv.)

For Sale—

The following equipment of the late Dr. E. H. Heaton: Large Fisher cabinet—latest type machine; Morse wave generator; deep therapy lamp; and galvanic battery outfit. All are in perfect condition, having been used only one year. Will sell for half price. Address Mrs. E. H. Heaton, Leesburg, Va. (*Adv.*)

Obituary Records

Dr. William Patterson Isley,

Of Hampton, Va., died April 22, at the age of 55 years. He was a native of Burlington, N. C., and studied medicine at Vanderbilt University, Nashville, Tenn., from which he graduated in 1899. He had been a member of the Medical Society of Virginia since 1905. His wife and several children survive him.

Dr. Thomas Edward Peery,

Bluefield, W. Va., member of the Medical Society of Virginia since 1908, died March 26, of chronic nephritis, at the age of fifty-four years. He was graduated in medicine from the College of Physicians and Surgeons, of Baltimore in 1895, and was formerly a member of the Staff of the Bluefield Sanitarium.

Dr. Nathaniel S. Smith,

Chincoteague, Va., graduate of the University of Maryland, Department of Medicine, Baltimore, in 1864, died April 3rd, death being due to chronic valvular disease of the heart. He served as a pharmacist in the U. S. Navy in 1864 and 1865, and from 1866, practiced his profession continuously in Accomac County, Virginia, to about two weeks before his death.

Mrs. M. W. Jewett.

Wife of Dr. M. W. Jewett, of Ivanhoe, Va., died at her home in that place, February 22, 1928, after an illness of three years.

Dr. Zenas Fearing, Jr.,

Elizabeth Ctiy, N. C., died March 17 at the age of fifty-four years. He graduated in medicine from the former University College of Medicine, Richmond, in 1901, and later located in North Carolina. He was at one time mayor of Elizabeth City.

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TUMORS OF THE BLADDER.*

By A. I. DODSON, M. D., Richmond, Va.

With relatively few exceptions bladder tumore are of epithelial origin. They may be divided for clinical purposes into three classes: the papillomata or those projecting into the bladder, sessile tumors or those with a broad base spreading laterally along the mucosa, and infiltrating growths which penetrate the bladder wall and often invade the prevesical tissues. Pathologically, the papillomata are of a relatively mild degree of malignancy; in fact, most of them begin as benign tumors gradually becoming malignant if neglected. The infiltrating growths are the most malignant type, while the sessile growths are intermediate in malignancy so far as can be determined by their clinical behavior. Clinically, the malignancy or the danger to life of these growths depends largely upon the stage at which they are diagnosed and treated. Fortunately most of them are of papillomatous nature of which 90 per cent are benign in their incipiency and consequently respond promptly and favorably to treatment. The malignant papillomatous tumors grow from a small base and do not extend below the mucous membrane until far advanced; they also respond satisfactorily to early treatment. The sessile and infiltrating growths, while more resistant to treatment, are by no means hopeless if seen early.

The symptoms of bladder tumors are usually those of cystitis plus hematuria or hematuria alone. Bleeding occurs in about 75 per cent of bladder tumors; it varies greatly in amount and is usually intermittent. Often several weeks or months may intervene between attacks of bleeding. One of my patients had a slight attack of bleeding two years before he came to me for diagnosis. At that time he was given some medicine and the bleeding ceased and only appeared again about a month before I saw him. Blood in the urine is a danger signal that should never be passed over with palliative treatment. Internal medication rarely has any beneficial effect on the cause. In every instance treatment should await a positive diagnosis of the source and cause of the bleeding; usually a cystoscopic examination is indicated.

The usual signs of cystitis, including frequency of urination, pain and pus in the urine, may occur singly or all together as a result of infiltration of the bladder wall, decrease in the bladder capacity or secondary infection. Tumors arising in the region of the trigone or near the bladder orifice cause these symptoms quite early. In summary, we may say that an early investigation of the symptoms of cystitis or blood in the urine will result in an early diagnosis of bladder tumors and consequently increase the chance of cure. Such late symptoms of the passage of tumor fragments, retention of urine, anemia, and loss of weight are signs of neglect which should not be necessary to direct our attention to the nature of the patient's complaint.

The diagnosis of bladder tumors is made chiefly by the cystoscope. The symptoms as previously mentioned are similar to those of the varying types and degrees of cystitis. Hematuria is a cardinal symptom but may result from a number of other lesions. It must follow that the physician who insists upon a cystoscopic examination in all cases of cystitis or hematuria will discover bladder tumors in a curable stage. The majority of tumors are seen between the ages of forty and sixty years. The probability of malignancy increases with the age of the patient; it therefore follows that symptoms of bladder disease are of graver significance as age advances. Examination of the urine is important; microscopic blood has the same significance as frank hematuria. Occasionally tumor fragments are found in the urine. They usually occur in late stages of the disease and are often so necrotic that very

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.
From the Urological Service of St. Elizabeth's Hospital, Richmond, Va.

little can be determined by studying them. Infiltrating growths of the bladder base when reasonably advanced can be palpated by rectal or vaginal examination but other symptoms should cause their discovery at an earlier stage. X-ray examinations including cystograms are helpful only in showing calcareous masses, irregularities or filling defects, which demand a cystoscopic examination to determine definitely their nature.

Cystoscopically, one determines location and studies the character of the growth. In this way the treatment best suited for each individual is decided upon. If the tumor is a single papilloma growing from a small base with long thin papillae it is apt to be benign, especially so if there is no reaction about its base such as edema, induration or congestion of the mucosa. Simple electro-coagulation applied through the cystoscope is usually sufficient for the cure of such tumors. If the tumors are multiple, if the papillae are matted together or short and stubby, if there are areas of necrosis, or if the mucous membrane around the tumor is inflamed or edematous, the growths are usually malignant. The flat sessile growths which, while apparently not infiltrating the bladder wall, spread along the mucosa, covering relatively large areas without projecting markedly into the bladder, are malignant, while those tumors that infiltrate the bladder wall from the beginning, projecting very slightly into the bladder, are the most malignant of all. If seen early they appear as a small irregular mound surrounded by pronounced congestion and edema of the mucosa; necrotic areas and ulcers with indurated margins appear early in their growth. It is usually possible by means of small forceps passed through the cystoscope to secure bits of tissue for microscopic study; this is helpful in determining the degree of malignancy and, to some extent, the prognosis. It must be remembered, however, that bladder tumors as a rule metastasize rather late and even the most malignant types may be successfully dealt with if seen early.

The treatment of malignant growths consists of electrical coagulation, the application of radium, and resection with cautery. Resection is applicable only in those cases in which the tumor is confined to the upper half or free portion of the bladder. Those growing on or near the base are better treated with radium and electro-coagulation. This treatment may be carried out by means of the cystoscope or through open operation, depending upon the location and size of the tumor. If the tumor is so large that it cannot be completely coagulated at one sitting, it is best to open the bladder, remove the redundant portion of the tumor, and plant radium in the base. It is desirable that the bladder be sewed up tight using an in-dwelling urethral catheter for drainage. In this way, cystoscopy to determine the results of the treatment can be carried out much earlier. When treated through the cystoscope, the entire growth may be destroyed with radium, but it is usually better to destroy the projecting portion with electro-coagulation and plant radium in the base. Coagulation alone will usually destroy benign growths but is rarely sufficient for the cure of cancer. Radium emanations are preferable to the element; they are less irritating and can be applied through the cystoscope with greater ease. Regardless of the method of treatment employed it must be remembered that bladder tumors tend to recur locally and it is important that frequent observations of the bladder be made following treatment so that recurrences may be discovered and treated in their incipiency. An early diagnosis and the proper application of electro-coagulation and radium will cure the majority of bladder tumors and will so affect the remainder as to greatly prolong life and lessen the discomfort of the sufferers.

Mrs. J. B. C. first entered St. Elizabeth's Hospital, June the 3rd, 1924, complaining of painful and frequent urination. She stated that she had been treated for alkaline cystitis and deposits in the bladder for a period of ten years. Cystoscopic examination showed the bladder mucosa to be coated over with a dark crystalline deposit which a chemical analysis showed to be chiefly phosphates. After getting the urine acid and instilling silver salts into the bladder, a great deal of the deposit disappeared. I was then able to see along the anterior and right lateral walls of the bladder a number of small ulcerations with slightly indurated margins. There was no evidence of malignancy so far as I could see at that time. After staying in the hospital about a month, she improved a great deal and went home. She came back September the 15th, 1926. Examination showed less deposit on the bladder wall but the ulcerated area seemed somewhat more indurated. The possibility of tumor was considered but, following bladder irrigations

for about a month, the lesions showed a great deal of improvement. The patient was sent home and directed to return in two months. She did not come back until July 14th, 1927. Examination at this time showed two irregular flat growths at the junction of the right lateral

Fig. 1.—Two irregular flat growths that developed in a patient who had been treated for alkaline cystitis for thirteen years.

with the anterior wall of the bladder. (Fig. 1). The entire area was thoroughly desiccated using d'Arsonval current applied through the cystoscope. She again returned August the 18th and the tumors in the bladder seemed to be about as large as they were before any treatment was given. She was then operated upon and a large portion of the right lateral wall and anterior wall, together with the tumor was resected. It was found after resection that the growth was a very low grade squamous cell epithelioma but it had penetrated the entire bladder wall. Sixty mg. of radium in needles was placed in the tissues adjacent to the area from which the tumor had been removed. She made a satisfactory recovery from the operation. It seems to me that this patient's cancer was caused by constant irritation of long standing.

Dr. E. P. M. entered St. Elizabeth's Hospital, January the 23rd, 1927, complaining of intermittent hematuria of about a month's duration. Examination showed a papillomatous growth just behind and over-hanging the right ureteral orifice. (Fig. 2). Apparently there was very little irritation or edema around the bladder wall. The growth was about an inch in diameter. On January the 24th, 1927, he was operated upon under ethylene anesthesia. A suprapubic cystotomy was done. The bladder wall was packed off with gauze and the growth removed by cutting across at its base with the high frequency cautery knife. The pedicle of the growth was only about a quarter of an inch in diameter. The pedicle and adjacent wall of the bladder were thoroughly desiccated and sixty mg. of radium in needles was inserted in this area and left for a period of four hours. The growth was a papillary carcinoma, about grade two. The patient left the hospital March the 15th, 1927, in excellent condition. Cystoscopic examination done on July the 11th, 1927, showed the bladder mucosa to be entirely normal throughout with the exception of a scar on the right side at the former location of the tumor. (Fig. 3).

Mr. C. L. W. was admitted to St. Elizabeth's Hospital on August the 24th, 1927, complaining of bleeding from the bladder of about six weeks' duration. On questioning the patient he said that two years ago he had some bleeding from the bladder which persisted only about two days. He consulted his physician who gave him some medicine and the

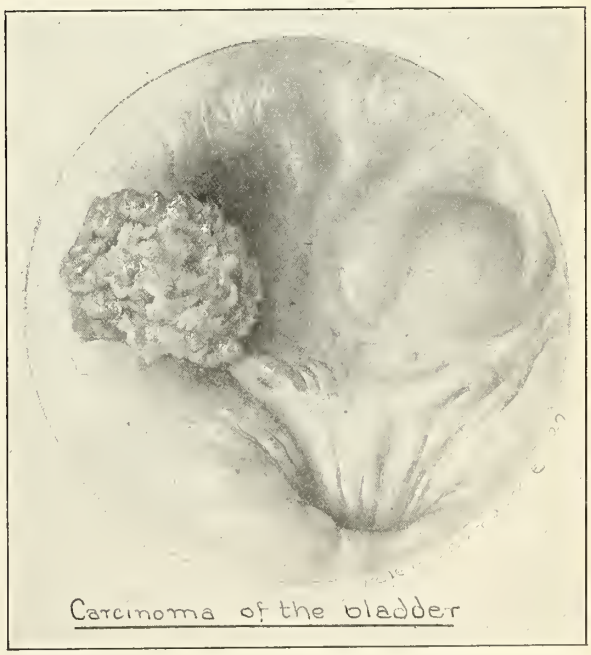

Fig. 2.—Malignant papilloma of the bladder. The pedicle of the growth was only about a quarter of an inch in diameter.

bleeding stopped. He did not suffer any further inconvenience until the onset of his present trouble, about six weeks before admission.

Fig. 3.—Condition of bladder seen in Figure 2, six months after operation.

His urine was definitely colored with blood and he complained of considerable pain when voiding. Cystoscopic examination showed a

Fig. 4.—Large lobular carcinoma projecting into the bladder.

large lobular mass projecting into the bladder from the right side. (Fig. 4). The mucosa around the growth was very much congested. On August the 26th the patient was operated upon under ethylene anesthesia. Suprapubic cystotomy was done and the wall of the bladder packed off and the growth excised at its base with high frequency cautery knife. The pedicle and the area immediately around it were thoroughly desiccated and sixty mg. of radium in needles planted in the area and left for a period of six hours. The growth was about two and a half inches in diameter and was a papillary carcinoma of grade three malignancy. The patient made a satisfactory immediate recovery and left the hospital September the 18th, 1927, in very good condition.

The first of these patients illustrates the probability of a long continued bladder irritation eventually resulting in a malignant growth. The other two show the importance of thoroughly investigating all cases of hematuria.

St. Elizabeth's Hospital.

URETERAL SPASM AND STRICTURE: THEIR CLINICAL SIGNIFICANCE.*

By LINWOOD D. KEYSER, M. D., Roanoke, Va.

During the past seventeen years the pathological status of ureteral stricture as described and emphasized by Hunner has been the subject of widespread discussion and at times caustic dispute. The evidence from clinical and necropsy sources for the existence of the lesion, the rationale of its diagnosis, and the propriety of its specific treatment have all been just indefinite enough to be confusing, and have been based on data variously interpreted,—on the one hand as scientific and sound, and on the other, as indeterminate and open to grave doubt. However this may be, those conversant with the urologic literature of the day must realize that Hunner's teaching has made its impression and is meeting each year with increasing acceptance in the profession. Even the most conservative are yielding to the test of ureteral dilatation in cases of obscure and indeterminate pain in the region of the urinary tract, even though this is done with the sacrifice of some prejudice and with much mental reservation.

Time and the clinical experience of careful observers who analyze and re-analyze their clinical and autopsy data, without prejudice and without being either too radical or too

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

conservative, will help us to evaluate the exact status of ureteral strictures. Therefore, let us approach the subject with the attitude of an open mind.

Spastic reactions or tonic contraction states in smooth muscle structures such as the esophagus, gastric cardia, pylorus, intestines, arteries, etc., with the production of pain, are well recognized and therapeutic measures, for these conditions are to some extent accounted as standard procedures. If reasoning by analogy is ever permissible, we may easily believe that the rich sympathetic innervation of the renal pelvis and ureter adapt these structures well to the occurrence of intrinsic spastic phenomena, such as occur in smooth muscle structures elsewhere.

In addition to the anatomic features of the pelvis and ureter, their automatism of peristalsis, and their type of innervation, the evidence from the physiological and experimental surgical laboratory is illuminating. Irritation mechanically or by drugs), ligation, stripping, and denervation experiments lead us to feel that nodal spasm from irritation at an inflammatory site or from some imbalance of the nerve supply, may possibly explain the pain or ureteral stasis with its sequelae, which occurs in some of those obscure conditions, to which the terms nephralgia, ureteralgia, nephritis dolorosa, and hysterical renal or ureteral colic, have been applied.

It is a leading question of the day among urologists whether the mechanism of so-called ureteral stricture involves organic stenosis or whether we are including also, under this diagnosis, local spasms due to inflammatory irritation, reflex causes, or disturbance of the autonomic nerve supply. Hunner early conceived of a "wide stricture area", i. e., an area of ureteritis, set up by focal infection. During periods of inflammatory quiescence, the strictured areas are more or less patent, urinary drainage more or less competent, and urologic findings likely to be minor. With exacerbation of the inflammation there occurs ureteral spasm or edema; ureteral occlusion is more pronounced, and a series of pathologic changes such as stasis, urinary tract infection, and even bleeding or stone formation, ensue.

The analysis of data taken from the clinical records of sixty patients observed during the past four years and considered to belong to the spastic ureter group has proved interesting. It should be emphasized that these patients were uniformly subjected to most scrupulous examination from the standpoint of internal medicine, neurology, gynecology, orthopedics, and urology. Many of them had been previously treated by numbers of physicians, surgeons, and specialists in consultation, for the same group of symptoms presenting when they came under our care. Cases presenting major urologic findings such as stone, tumor, tuberculosis, and pyonephrosis, have been excluded unless, at the same time, definite ureteral obstruction was found by the bulb-carrying catheter, or the pyeloureterogram showed ureteral dilatation above a constricted area. Eleven men and forty-nine women comprised the group.

Symptoms presented included dysuria, and ureteric or renal pain, variable in type from a sense of discomfort to intense colic-like attacks simulating the presence of impacted stone. Previous operation for the relief of symptoms had often been performed and most often without relief. In all, forty-seven operations had been performed on the sixty patients, forty-two of these having involved laparotomy. The urologic findings were usually minor, bilateral renal function being good, and the urine showing as a rule only an occasional white or red cell, often with a trace of albumen. Periodic attacks of pyelonephritis were often seen. The bulb-carrying catheter demonstrated a hang on withdrawal almost consistently, three times in the upper ureter, six times in the middle ureter, and forty-nine times in the lower ureter or at the meatus. Frequently meatal spasm and general ureteric spasm, with intense gripping of the catheter throughout the course of the ureter, were encountered.

Pyeloureterography was interpreted as normal eight times. Twenty-one cases presented slight blunting of the calyces, eleven ureteral dilatation, seven hydronephrosis, five kink of the ureter, eleven multiple areas of spasm (stricture?) and six renal ptosis.

Dysmenorrhea, menorrhagia, menstrual exacerbation of urinary symptoms, tenderness in the vaginal vault, gastro-intestinal symptoms, abdominal pain variable in site from time to time, headache, pain in the hip and thigh, with radiation to the knee, and constipation with painful defecation, have been associated symptoms. Concomitant pathology such as infections of the teeth, sinuses, tonsils, gall-bladder, prostate, and cervix, visceroptosis, colitis, etc., has been frequently demonstrable, and

treatment of these conditions has been considered of primary importance before attempting any extensive therapy of the urinary tract condition. In twelve instances we noted that the urinary tract symptoms were aggravated by a preceding respiratory tract infection.

Our first effort at treatment has been ureteral dilatation. For the purpose we have found bougies, bulb-bearing catheters, and metal dilating olives used with the No. 12 F guide of the Braasch direct cystoscope of value, although the operating guide of the Buerger cystoscope or the McCarthy pan-endoscope may be found equally satisfactory in the hands of those who prefer these instruments. The size of the dilating bulb has varied from 12 F to 20 F. We have followed the advice of Hunner and as a rule dilated both ureters, an average of four dilatations to each side having been carried out. Ordinarily a 12 F to 14 F bulb has given good results but, if symptoms persist, dilatation to 18 F or 20 F has sometimes been necessary for relief. The severity of the cystoscopic reaction has naturally varied. The dilator unquestionably does provoke more post-cystoscopic pain than the passage of the usual 5 F or 6 F catheter. However, care in asepsis, the utmost degree of gentleness in manipulation, the avoidance of trauma, especially that produced by attempting to drive a dilator through an area of transient spasm, and gradual rather than immediate dilatation to higher degrees, have led to very few mishaps and none of these have proved serious.

With the subsidence of the post-cystoscopic reaction, relief for a time has been the rule but the end results have not been as good as we should have expected from the degree of initial improvement. Eighteen patients have remained well for over a period of one year, thirty-two seem definitely improved, and ten are unimproved or still under treatment. One patient was subjected to nephropexy with decapsulation and partial periarterial sympathectomy with relief after the dilatation method had failed. A similar case was relieved by such an operation for several months when recurrence of pain, fever, and swelling of the kidney, without hydronephrosis, forced us to nephrectomy. Recurrence of the pain on the opposite side after eighteen months has been temporarily relieved by dilatation. Two other nephrectomies have been done after repeated dilatation had failed. These patients seem much improved but still complain of some pain at the old stricture site. Another patient had recurrence of typical colics on the opposite side one year after nephrectomy done elsewhere. After many periodic recurrent attacks, with pyelonephritis, spontaneous hematuria, and on two occasions anuria for several days, persistence in dilatation of the ureter brought relief and she is now free from symptoms for nearly two years.

The pathology of the kidneys removed was of interest. Lymphoid infiltration, especially in the cortical areas, cloudy swelling in the collecting tubules, with possibly slight dilatation, was noted in all three. Two of the kidneys showed capsular and perirenal sclerosis of the type described by O'Conor. Hypertrophy of the walls of the ureter was slight and on the whole these tissues showed nothing remarkable.

Comment

In attempting to differentiate organic stenosis and intrinsic ureteral spasm, there has been difficulty. In making either diagnosis there is unquestionably a variable percentage of error. The post-mortem or surgical demonstration of the strictured area would be our one positive criterion but this is not frequently applicable under clinical conditions. Goldstein and Carson, Peacock and Hain, and Hunner and Wharton have given us data which is suggestive. The report of Martin Schreiber recently published as the result of a study of 100 consecutive unselected autopsies would lead us to believe that the postmortem incidence of ureteral stenosis from organic disease is about 12 per cent. This work appears to have been conducted along scientific lines and those of us who are interested will await confirmation or dispute of this evidence by similar research in the hands of others.

Clinical methods give only presumptive evidence. The hang test may be positive with either spasm or stricture. The catheter itself may mechanically stimulate spasm locally and thus produce transient obstruction to entry or withdrawal. Watching the withdrawal of the bulb through a cystoscope nearly always reveals a hang at the meatus.

The technique of pyeloureterography is neither satisfactory nor standardized. All media used are more or less irritating and may in themselves produce nodes of spasm or confusing hyperperistalsis at various points, so that the interpretation of local narrowings of

the lumen is open to question. Hydronephrosis, ureteral dilatation, and infection could be the result of persistent spasm or of organic stricture. According to Hunner the "wide stricture" with its periodic relaxation and spasm may account for any variety of dilatation, a normal pelvis, or even a pelvis smaller than normal.

The relaxation of the ureter under regional anesthesia is well known and has been frequently employed to pass ureteral obstruction, stone, or stricture in spasm. It may give positive information if we assume that there is organic stenosis when there is no relaxation of the obstruction. The reproduction of similar pain by passage of the bulb or by pelvic distention is merely presumptive evidence that we are at the seat of trouble. It is of no avail in deciding between stricture and spasm.

The type of personality presented by many patients of this group has left its impression. Thirty-four of them especially have been classified as hypersensitive, psychoneurotic, or what we might call "hyperkinetic" individuals who have not too well adapted themselves to the stress of modern life. A few of them have had periodic attacks of pain in first one part of the body, and then another, often as transient as they are intense. It would seem that everywhere that smooth muscle tubules occur, especially within the abdomen, this smooth muscle is capable of spasm in the absence of gross organic affection. For instance, precordial pain, sinking spells, palpitation, intestinal colic, cramps one day in the epigastrium or over the gall-bladder, the next day in the sigmoid region, etc., may occur in the same individual from time to time. Thus the problem may be to some degree neurologic as well as urologic and the ureteral colic may be only one phase of a general spastic neurosis. Thus the analogy of ureterospasm to pylorospasm, cardiospasm, Raynaud's disease and the like may not be far fetched and may have something in common in their underlying neuromotor "dyskinesia", to use a term of Aschoff's.

From the evidence given above we cannot draw positive conclusions. We have stated a problem rather than solved it. Impressions however are worthy of record, even though these impressions be changed by subsequent experience. The conditions of ureteral stricture, spasms, and the allied states of nephralgia, and hysterical kidney colic perhaps represent a neuromotor dysfunction such as is seen in the esophagus, cardia, and other smooth muscle tubules. We have purposely avoided the subject of the sequelae of ureteral stasis. The effort has been made to present what we know and what we do not know of its cause. Unquestionably, organic stenosis of the ureter does occur and perhaps not infrequently. However, in cases receiving treatment it is probably not always present. The clinical methods for differentiating ureteritis and intrinsic spasm are not clean cut and often fail to tell us which mechanism is at fault in the individual case. In our own hands about 80 per cent of the cases diagnosed and treated as belonging to the group have received benefit, while 33 per cent have had one year or more of entire relief.

Yet we feel that our present methods of treatment are not satisfactory, especially in the matter of end results. We need more work of the pathologist and of physiologists of the type of Gaskell, Sherrington, Hunter and Royle to clarify the neurological features of the condition. Dilatation in many of these hypersensitive patients presents a temporary ordeal and recurrence is all too frequent. However, if the utmost care is taken to exclude other pathology, ureteral dilatation is as yet our best initial effort and should be tried as a therapeutic test at the beginning. It is certainly never so grave a procedure as exploratory laparotomy which is undertaken perhaps too lightly in many patients of the group.

There is need for further experience with regard to surgical therapy such as the denervation or sympathectomy operations practiced by Ambard and Papin, and the surgical exploration of the strictured area with a view to ureteroplasty or resection. Nephrectomy is always revolting when done merely for the relief of pain and should be forced upon us only when repeated conservative measures have failed. Even then there is no assurance that permanent relief will be obtained, especially if ureterectomy is not carried out at the same time.

BIBLIOGRAPHY.

1. Keyser, L. D.: Benign Ureterospasm, Ureteral Stricture, and Allied Syndromes. *Trans. Assoc. Resident and Ex-Resident Physicians of the Mayo Clinic*, 1925. VI, 253-259.
   Idem—Trans. Amer. Urological Assoc. Jr. Urol. (in press).
2. Engleman: Zur Physiologie des Ureter. *Arch. f. d. ges. Physiol.* 1869, II, 243-293.
3. Blum, V.: Physiologie und Pathologie des Harnleiters. *Zts. f. Urologie.* 1925, XV, 161.

4. Andler, R.: Die Atonie des Harnleiters mit Dilatation und Hydronephrose, ihr klinische Vorkommen und ihrer tierexperimentelle Erzeugung. *Zts. F. Urolog. Chir.* 1925, XVII, 298.
5. Wislocki, G. B., and O'Conor, V. J.: Experimental Observations upon the Ureters, with Especial Reference to Peristalsis and Antiperistalsis. *Bull. of the Johns Hopkins Hospital*, 1920, XXXI, No. 352, 197-202.
6. Milliken, L. F., and Karr, W. G.: The Influence of the Nerves on Kidney Function in Relation to the Problem of Renal Sympathectomy. *Jr. of Urol.*, 1925, XIII, No. 1.
7. Israel, J.: Surgical Clinic of the Kidney Diseases. Chapter 13, Concerning Renal Hematurias, Nephralgias, and Colics in Apparently Unaltered Kidneys. 1901 (quoted by Hunner).
8. Harrington, S. W.: The Effect on the Kidney of Various Surgical Procedures on the Blood Supply, Capsule, and on the Ureters. *Arch. of Surg.* 1921, II, 547-592.
9. Eisendrath, D.: Ureteral Strictures, Kinks, and Abnormal Inserts. *Surg. Gyn. and Obst.*, 1925, XLI, 557.
10. Papin, E., and Eisendrath, D.: Classification of Renal and Ureteral Anomalies. *Annals of Surg.*, 1927, LXXXV, No. 5, 735-757.
11. Rathburn, N. P.: The Incidence of Ureteral Stricture. *Jr. of Urol.* 1925, XVI, 403.
12. Jacobson, E.: Spastic Esophagus and Mucous Colitis. *Arch. of Int. Medicine*, 1927, XXXIX, No. 3, 433-445.
13. Goldstein, A. E., and Carson, W. J.: A Study of the Urinary Tract in Autopsy Specimens; Correlation of Anatomy, Pathology, and Roentgenology. *Jr. of Urol.*, 1926, XV., 155.
14. Braasch, W. F.: Dilatation of the Ureter and Renal Pelvis. *J. A. M. A.*, 1919, LXXIII, 731-737.
Data with Regard to Lesions of the Nerves of the Urinary Tract. *Jr. of Urol.*, 1925, XIII, No. 4, 383-397.
Errors in the Interpretation of Urologic Findings. *Jr. of Urol.*, 1925, XIV, No. 6, 631-651.
15. Hunner, G. L.: Chronic Urethritis and Chronic Ureteritis Caused by Tonsillitis. *J. A. M. A.*, LVI, 1911, 937.
Stricture of the Ureter, Excluding Tuberculosis, and Calculus; Report of Fifty Cases. *New York Med. Jr.*, 1916, CIV, 5.
Ureteral Stricture. Report of One Hundred Cases. *Johns Hopkins Hosp. Bull.*, 1918, XXIX, 1.
The Etiology of Ureteral Calculus. *Surg. Gyn. and Obst.*, 1918, XXVII, 252.
Ureteral Stricture. An Important Etiologic Factor in the So-called Essential Hematurias. *J. A. M. A.*, 1922, LXXIX, 1731-1739.
Conservative Renal Surgery Associated with Ureteral Stricture Work. *Jour. of Urol.*, 1923, IX, No. 2, 97-149.
End Results in One Hundred Cases of Ureteral Stricture. *Jour. of Urol.*, 1924, XII, No. 4, 295-324.
Ureteral Stricture. Report of Unusual Case, Illustrating Influence on Formation of Urinary Calculi, and on Recurring Calculi. *J. A. M. A.*, 1924. LXXXII, 509-516.
Radiographic Evidence of the Association of Ureteral Stricture and Urinary Calculi. *Jr. of Urol.*, 1925, LIII, No. 5, 497-523.
Ureteral Stricture in Obstetrics, with Special Reference to Multitude Abortions (Renal), and to Pyelitis of Pregnancy. *Am. Jr. of Obst. and Gyn.*, 1925, IX, No. 1.
Drainage as a Factor in Renal Disease. *Surg. Gyn. and Obst.*, 1926, XLIII, No. 5, 615-627.
16. Hunner, G. L., and Wharton, L. R.: The Pathologic Findings in Cases Clinically Diagnosed as Ureteral Stricture. *Jour. of Urol.*, 1926, XV, No. 1, 57-100.
17. Caulk, J. R.: The Relation of Roentgenology to Urology. *Jr. of Radiology*, May, 1923.
Description of Two Procedures for the Relief of Obstruction at the Vesical End of the Ureter. *Trans. Amer. Assoc. Genito-Urinary Surgeons*, 1923, XVI.
Pyelonephritis. *Jr. of Urol.*, 1926, XVII, No. 2, 117-125.
18. Caulk, J. R., and Fischer, R. F.: An Experimental Study of Ureteral Ligation. *Surg. Gyn. and Obst.*, April, 1920, 343-349.
19. Kappis, M.: Die diagnostische and therapeutische Verwertung der paravertebralen Novacaineinspritzung. *Therapie d. Gegenw.* 1925, LXVI, 335.
20. Papin, E., and Ambard, L.: Resection of the Nerves of the Kidney, for Nephralgia and Small Hydronephroses. *Jr. of Urol.*, 1924, XI, 337-347.
21. Crowell, A. J.: Treatment of Abdominal Pain Due to Ureteral Obstruction. *J. A. M. A.*, 1922, LXXIX, 1103-1104.
22. Burford, C. E.: Nephropexy for the Relief of Ureteral Kinks Associated with Ptosis. *J. A. M. A.*, LXXXVIII, No. 8, 541-544.
23. Proctor, Ivan: Ureteral Strictures in Women. *Southern Med. and Surg.*, LXXXIX, No. 2, 93-99.
24. Simons, I.: Ureteral Kinks. *Jr. of Urol.*, 1926, XV, 29.
25. Livermore, G. R.: Ureteral Stricture. *Jr. of Urol.*, 1926, XV, 45.
26. Herger, C. C., and Schreiner, B. F.: Strictured Ureters, Hydronephrosis, and Pyonephrosis, Occurring in Cancer of the Cervix Uteri. *Surg. Gyn. and Obst.*, 1926, XLIII, No. 6, 740-744.
27. Peacock, A. H., and Hain, R. F.: Ureteral Stricture. Symptoms, Treatment, Complications and Results. *Surg. Gyn. and Obst.*, 1926, XLIII, No. 1, 54-61.
28. O'Conor, V. J.: Perirenal Sclerosis (Chronic Cicatrizing Perinephritis). *J. A. M. A.*, 1925, LXXXV, 1118.
29. Frontz, W. A.: Errors in Technique and Interpretation of Uretero-Pyelography. *Jr. of Urol.*, 1925, XIV, 579-592.
30. Rost, Franz: The Pathological Physiology of Surgical Diseases. Reimann's Translation. 1923, Blackiston's, Philadelphia. 535 pp.
31. Schreiber, Martin: Ureteral Stricture; Its Anatomical and Pathological Background. *Surg. Gynec. and Obst.*, 1927, Vol. XLV, No. 4, 423-446.

419-421 *Shenandoah Life Building.*

"HERE'S TO HIM."

Here's to the man whose hand
Is firm when he clasps your own—
Like a grip of steel
That makes you feel
You're not in the world alone.

Here's to the man whose laugh
Puts the somber clouds to rout—
And the man who's far
And kind and square
To the one that's down and out.

(*Selected*)

CHRONIC PYURIA IN CHILDREN: FINDINGS IN A SERIES OF CASES.*

By JOHN H. NEFF, M. D., University, Va.

In very recent years Stevens[1], Kretschmer[2], Bugbee and Wollstein[3], Caulk[4], Hunner[5], among others, have directed attention by timely papers to the need of attacking the urological problems in children in essentially the same manner as those of adults. The reports of these authors have clearly demonstrated the feasibility of such practice and the improved results that follow therefrom. The correctness of the attitude finds no better verification than in the field of kidney infections.

Pyelitis is the urological diagnosis most commonly made in infants and children. The frequency and importance of this disease have been emphasized by innumerable writers. Its intimate relation to gastro-intestinal disorders and to remote infections is universally recognized. Many cases respond readily to dietary and medicinal therapy, aided, oftentimes, by eradication of distant inflammatory foci. Others, however, run a protracted course,—some with recurrent sharp exacerbations, some with a continuous slight elevation of temperature, all usually with a persistent pyuria. Notably in these chronic cases there may well be in the urinary tract itself acquired or congenital changes having a causal relationship to the inception or persistence of the renal infection, and further, making certain that, untreated, kidney damage will be far graver than that of a simple pyelitis.

To stress the necessity of complete urological study for this latter group particularly, I wish to give in a little detail the histories and findings in a selected series of children with chronic pyuria. The conditions reported are illustrative rather than comprehensive. Only limitations of space and time prevent the inclusion of other equally important possibilities such as calculi and tuberculosis.

Case I. Unilateral Infected Hydronephrosis due to Aberrant Vessels.—F. S., girl, aged eight, was admitted February 7, 1923. For twelve months she had had intermittently pain in the left flank accompanied by nausea, slight fever, dysuria and pyuria. Physical and X-ray examinations were negative. Catheterized urine contained pus and bacilli. Ureters were readily catheterized. Left urine showed 25 pus cells to the high power field, culture B. Coli. Right urine was normal. An attempted left pyelogram resulted in an unsatisfactory film. *Diagnosis:* Left pyelitis.

The left pelvis was lavaged on three visits during the next month. On March 8, 1923, the left urine showed four pus cells and many bacilli to the high power field.

She was next seen January 13, 1925. There had been practically no symptoms in the interim until a rather severe attack ten days before. The left ureter was catheterized with a No. 8 catheter by the Kelly method. Urine showed twelve pus cells to the field, many bacilli. Phthalein output in sixteen minutes after intravenous injection was 6 per cent, bladder collection 25 per cent. In attempting a pyelogram pain developed after the injection of 5 c.c. Only the lower third of the ureter was outlined. This was obviously dilated. *Diagnosis:* Left ureteral stricture, pyelitis.

January 31st the low stricture was dilated through No. 12 F. Pelvic capacity seemed to be 8 c.c. The patient had rather severe pain for the next two weeks. On February 14th the ureter was well shown after the injection of 7 c.c. of sodium iodide but the pelvis was not outlined. Upon advancing the catheter a little farther, the flow for the first time in the many cystoscopies became rapid and continuous. Injection of additional iodide solution demonstrated a large rounded hydronephrosis. A nephrectomy was advised but refused.

Patient returned July 16, 1925, because of further typical attacks. A nephrectomy was done through a lumbar incision. The kidney was quite thinned out. The pelvo-ureteral juncture was sharply angulated over aberrant vessels going to the lower pole, the pelvis bulging forward over these vessels in a striking manner. Convalescence was uneventful, ultimate result excellent.

Case II. Infected Hydronephrosis of one Side of a Horseshoe Kidney.—M. B., girl, aged ten, was admitted September 28, 1925, because of acute right mastoiditis. A simple mastoid operation was done. She was discharged five weeks later. During her stay she ran an unexplained low-grade temperature. The urine averaged three to ten pus cells to

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the high power field. She was readmitted November 10, 1925, with an abscess near the mastoid scar. This was promptly drained.

She was referred for urological consultation November 28th, because of the continued temperature and the constant finding of a moderate amount of pus in the urine. There was a history of recurrent pain in the left flank for four years. In 1922 a cystoscopic diagnosis of left pyelitis had been made in New Orleans. Pelvic lavage had been employed there four times.

Abdominal palpation gave no positive findings. X-ray examination of the urinary tract was negative.

Cystoscopy. The bladder was normal. The left ureter was readily catheterized, the urine was pus free, culture negative. The right catheter could be passed only 3 cm., no flow was obtained.

Cystoscopy, December 4, 1925. Bladder urine showed twelve pus cells to the field. The ureters were readily catheterized after the Kelly method. Both specimens of urine were pus free. An attempted left pyelogram showed only the ureter filled. This flared upward and outward quite abruptly about the level of the iliac crest.

Cystoscopy, December 8, 1925. Left ureter was catheterized to the pelvis, flow rapid and continuous. Specimen contained many degenerated pus cells, smear showed no organisms, culture negative. A fifteen minute intravenous phthalein test gave a 17 per cent bladder collection, no output on the left. Pyelogram demonstrated a huge multilocular hydronephrosis with the line of the ureter bifurcating the pelvic shadow (Fig. 1). The catheter was left in place for drainage. Severe pain and active nausea followed its removal five days later.

Fig. 1. Case II.—Note bilateral non-rotation of pelvis, outward flaring of both ureters, left multilocular hydronephrosis.

Cystoscopy, December 15, 1925. Both ureters were catheterized. A right pyelogram outlined a slightly dilated, non-rotated type of pelvis (Fig. 1).

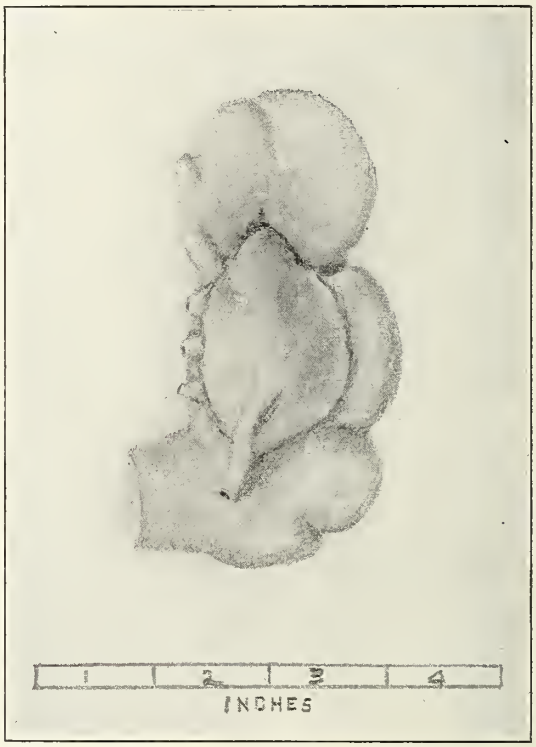

Fig. 2. Case II.—Sketch drawn to scale of left half of horseshoe kidney. Nephrostomy secured shrinking to one-half or less of the original size.

Diagnosis: Infected hydronephrosis of the left half of a horseshoe kidney. The left catheter was kept in place. On December 22, 1925, a left nephrostomy was done. This seemed clearly indicated because of the patient's poor condition and as a means of rendering a later nephrectomy safer and easier.

Early in January, 1926, she developed a left otitis media. This was shortly complicated by mastoiditis for which a simple mastoid operation was performed. The patient remained in the hospital until April 18, 1926—over five months. During the whole period she had slight fever with an occasional elevation to 103° or more. This was never satisfactorily accounted for in that, with the kidney well

drained and both ears healed, no additional lesions could be demonstrated by careful and repeated studies. Blood transfusion, autogenous staphylococcus vaccine therapy and the usual supportive measures did not secure much improvement in her general condition. She was considered too frail for nephrectomy and was therefore sent out in hope of a possible gain from prolonged renal drainage under home surroundings.

She was re-admitted September 20, 1926. Her weight had increased seven lbs., hemoglobin was 75 per cent, red blood cells 3,000,000, there had been no further trouble with her ears. At home her temperature had ranged between 99° and 100°. The left half of the horseshoe kidney was removed October 5, 1926. The kidney had shrunk to one-half or one-third its size before nephrostomy (Fig. 2). The immediate reaction was violent, the later convalescence uneventful. She was discharged after four weeks.

In September, 1927, her mother reported the child had gained twenty-five lbs. since her original admission and that her general condition seemed to be excellent.

Case III. Stricture of the Ureter With Pyonephrosis.—M. H., boy, aged three, was admitted April 22, 1927. In November, 1926, he had had a ten day febrile attack diagnosed grippe. Some pus was found in his urine at the end of this sickness. From then to admission he had had six or seven attacks with high temperature, vomiting, frequency of urination and pain in the left lower abdomen. An X-ray examination, as well as a cystogram, at home, had been negative.

Physical examination was essentially negative. Urine contained a tremendous quantity of pus, smears showed a few bacilli, cocci in chains, no acid-fast organisms. Bladder culture grew only streptococcus hemolyticus.

Cystoscopy. Bladder appeared normal save for oedema and pouting of the deft ureteral orifice. Both ureters were readily catheterized. The right urine was pus free, the left loaded with pus, both cultures negative. A left pyelogram showed a very dilated tortuous ureter with the catheter coiled in the lower segment. The pelvis while poorly outlined, was evidently much dilated. (Fig. 3). The left catheter was fastened in position for drainage. Upon its removal forty-eight hours later, the child's temperature rose from 100° to 103°. A nephrectomy was promptly done. The kidney was a mere shell. (Fig. 3). The ureter was at least 2 cm. in diameter and it was a question whether, in view of the demonstrated

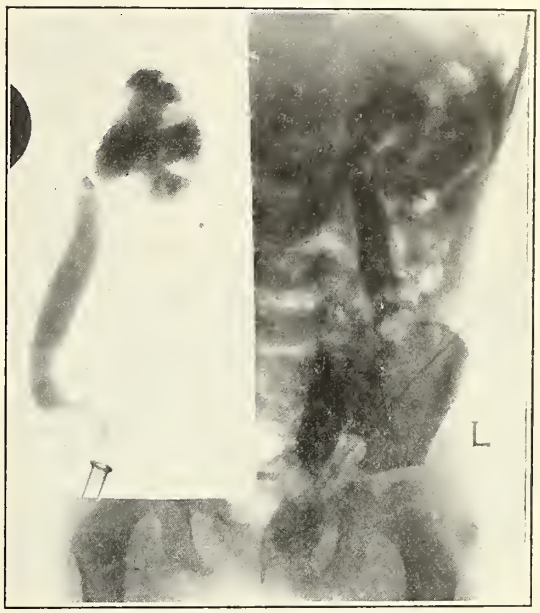

Fig. 3. Case III.—Observe the very dilated tortuous ureter. The insert shows the injected kidney and ureter after removal. The kidney is a mere shell.

stricture at the orifice, the ureter should be ligated or brought out in the wound. Decision was made to dissect out as much of the duct as was readily accessible and to trust to there being sufficient drainage into the bladder to avoid trouble from the ureteral stump. One-half or possibly more of the ureter was removed, the divided end inverted with a purse-string suture.

The boy was discharged after three weeks. He was running a slight temperature, urine showed 18 pus cells to the field. Temperature came to normal ten days later and remained normal. On September 30, 1927, he had gained five lbs., urine was pus free, general condition excellent.

Case IV. Ureterocele With Pyonephrosis.—C. S., boy, aged nine, was admitted March 2, 1927. Two years before admission he had had a febrile attack with general malaise diagnosed influenza. Pus was found in the urine. From then on he had had attacks of headache, gastric upset and bladder irritation every three or four months, and a constant pyuria. Guinea pig inoculation with bladder urine at home had given negative results. The

child was brought to the hospital only after much persuasion from a consulting pediatrician.

The boy was rather thin, slightly anemic. His temperature ranged between 99° and 100°. Otherwise physical examination, including X-ray of the urinary tract, was negative. Urine showed much pus, stains for tubercle bacilli were negative, culture B. Coli.

Cystoscopy. There was no cystitis. The right urine was pus free. The left ureteral orifice was minute and presented on a typical small ureterocele. (Fig. 4A). All efforts to

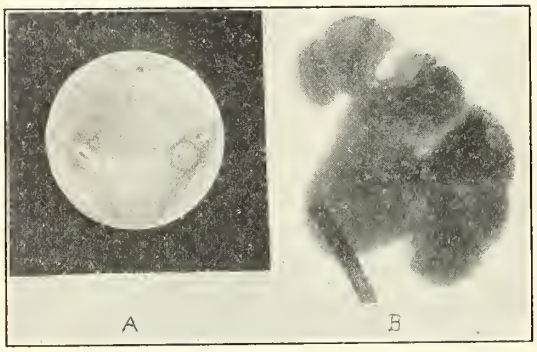

Fig. 4. Case IV.—A. Left ureterocele, pin-point orifice. B. Pyelogram of corresponding kidney after removal.

enter the left orifice failed. The tissue about the orifice was then vigorously fulgurated.

Cystoscopy, March 31, 1927. The ureterocele had been replaced by an actual retraction of the orifice but with no increase in its size. Efforts to enter it were unsuccessful.

Cystoscopy, June 3, 1927. Indigo carmine was given intravenously prior to the examination. The right efflux was a deep blue, no color appeared at the left orifice. The left ureter could not be catheterized.

Cystoscopy, June 6, 1927. Effort to catheterize the left ureter again failed. The right urine showed no pus. In seventeen minutes after intravenous injection phthalein output from the right catheter was 40 per cent with no collection in the bladder urine. It seemed clear that the functionless left kidney was the source of the pyuria. Nephrectomy was advised.

In removing the kidney the pleural cavity was inadvertently opened but without immediate or subsequent ill effects. The kidney was a thin-walled shell, the ureter greatly dilated. (Fig. 4B). Because of the marked stenosis of the ureteral orifice, the ureter was brought out of the lower angle of the wound. The patient's condition did not warrant protracting the operation to do a complete ureterectomy. Convalescence was uneventful.

Several later unsuccessful attempts were made to dilate the ureteral orifice from above. On August 3, 1927, colored fluid injected into the ureter did not enter the bladder and a ureterogram showed complete closure of the orifice. The boy's general condition was much improved, the urine pus free.

Case V. Atony of the Bladder, Bilateral Hydro-Ureter and Pyelonephritis.—J. E., girl, aged six, was admitted November 22, 1926. At the age of four, urine had been noted to have a disagreeable odor, urinalysis revealed much pus. Pyuria had been present on all subsequent examinations. There had been no chills, no renal pain, no frequent or difficult urination, no incontinence, no enuresis. She had not shown a normal gain in weight, appetite was small.

The conspicuous finding on physical examination was an abdominal mass reaching from the symphysis well above the umbilicus. Its shadow on an X-ray film came within 3 cm. of the 12th ribs. (Fig. 5). After she voided 800 c.c. and catheter obtained an additional 500 c.c., the mass disappeared. Parent's statements suggested that the bladder had been chronically over-distended for many months.

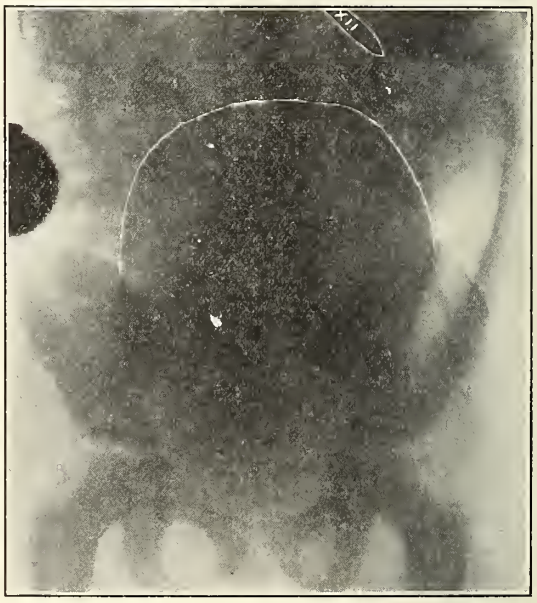

Fig. 5. Case V.—Note hugely distended bladder. Upper border bladder shadow and outline left 12th rib have been emphasized for clarity.

Suspicion was immediately aroused that there was either an obstruction to bladder drainage or some disturbance of bladder innervation. Neither was shown. Every examination to demonstrate a lesion of the spine or central nervous system gave normal findings. Repeated urethroscopic and cystoscopic study revealed no obstructive process. The urethra readily admitted a No. 24 F. sound. Catheterized urine contained much pus, many bacilli. Phthalein output in thirty minutes after intravenous injection was 30 per cent.

A cystogram showed regurgitation up the dilated tortuous left ureter. (Fig. 6). Through the cystoscope the bladder was found moderately inflamed, moderately trabeculated. Both ureteral orifices were widely patulous. The right kidney urine contained thirty pus cells to the field, culture B. Coli; the left urine six pus cells, culture negative.

The child remained in the hospital five weeks. Her temperature ranged around 100° during this whole period. She was first treated by catheterization and bladder irrigation twice daily. Later a continuous automatic bladder irrigation through an in-dwelling catheter was employed. Her residual urine slowly decreased. The mother was taught to catheterize the patient and instructed to drain and lavage the bladder once daily for an indefinite period. The child was urged to empty the bladder as completely as possible at each voiding.

Fig. 6. Case V.—Cystogram showing regurgitation up left ureter and marked dilatation of the upper tract on this side.

By March 9th the average residual urine was one ounce. In August the child was reported to show much systemic improvement, to be active, energetic, and with a hearty appetite. Treatments were being given every two or three days.

Case VI. Congenital Hypertrophy of Verumontanum, Bilateral Pyonephrosis.—M. E., boy, aged two, entered hospital January 11, 1927. Sickness had begun five weeks before admission with irritability, restlessness, and an irregular temperature. Early urinalyses had been negative, urine gradually had become grossly purulent as he developed suprapubic pain, strangury, enuresis. Temperature had frequently reached 104°. Physical examination had shown nothing unusual. X-ray films of the urinary tract were negative.

Effort to enter the bladder with an ureteral catheter failed. A 12 F. metal catheter first met a seemingly spastic obstruction in the deep urethra, then passed readily. A 15 F. sound was easily passed. Catheterized urine was very purulent, gave streptococcus hemolyticus in pure culture. A cystogram revealed regurgitation up the dilated tortuous left ureter, bladder contour was normal. Several later cystograms did not demonstrate right regurgitation. Two-hour phthalein output was 10 per cent. An average residual urine of 130 c.c. was found upon repeated catheterization. Under daily catheterization and irrigation his temperature dropped materially, and had a daily maximum between 99° and 100° after constant drainage was secured by an in-dwelling catheter.

Cystoscopy, February 10, 1927. There was an exudative cystitis. The internal urethral orifice shared in the oedema but otherwise appeared normal. On withdrawing the cystoscope into the urethra the edge of a rounded mass arising from the urethral floor could barely be visualized. The right ureter was catheterized, urine was pus-laden, culture streptococcus hemolyticus. Pyelogram showed the catheter coiled up in the lower portion of a dilated tortuous ureter. (Fig. 7). The mass in the prostatic urethra was interpreted to be a hypertrophied verumontanum and responsible for the higher obstructive changes.

Under continuous catheter drainage the boy

gained three lbs. by March 1, 1927. Through a 17 F. urethroscope the same rounded mass was seen in the deep urethra and was fulgurated. Fulguration was difficult and not entirely satisfactory. The procedure was repeated more effectively March 17, 1927, through a 22 F. endoscope. At this visit the urine was much clearer, two-hour phthalein output 45 per

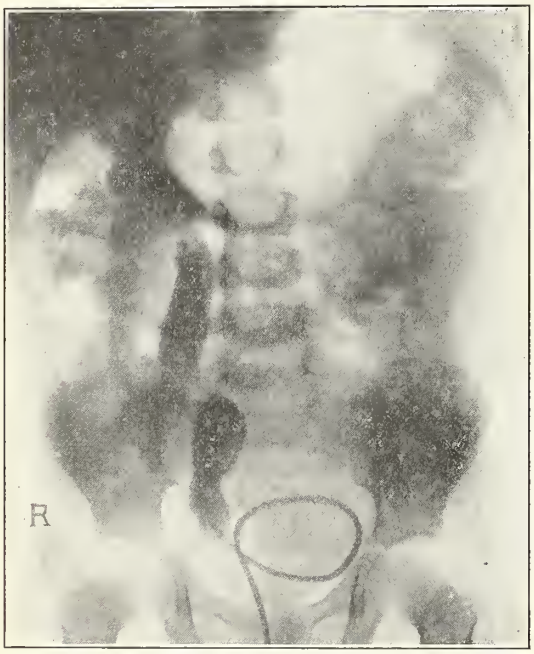

Fig. 7. Case VI.—Right pyelo-ureterogram. Note the catheter coiled in the greatly dilated ureter.

cent. After removing the permanent catheter on March 25th everything went along nicely for three days. The child then had a chill followed by temperature of 104°. The catheter was immediately replaced. Quite interestingly the residual urine was only 35 c.c. in contrast with the former residual of 130 c.c. The catheter was pulled out a few days later. Its reinsertion was very difficult and was followed by a severe reaction. It seemed the part of wisdom to abandon urethral work for a time. A suprapubic cystostomy was therefore done April 11, 1927. The bladder was found as thickened as in an old prostatic.

On September 30, 1927, suprapubic drainage was being continued. From time to time the child had had a slight febrile attack but on the whole had made steady improvement. He was very energetic, urine was less cloudy, weight six and one-half lbs. above that on first admission. Further attack upon the verumontanum was planned for some future date.

Case VII. Stricture of the Urethral Meatus With Pyelitis. — B. I., boy, aged fifteen, was admitted July 2, 1927. In December, 1926, he had had a two weeks' febrile attack diagnosed influenza. A week later a diagnosis of pyelitis was made. From then till admission he had had at weekly or two-weekly intervals pain in the right flank, chills and high temperature. From March to June he had received intensive treatment for malaria with no benefit. He was referred because of his history and the large amount of pus in the urine.

On admission the external meatus was found to be minute and the foreskin densely adherent. He was discharged after circumcision and meatotomy. Three weeks later he showed distinct improvement. There had been one mild febrile attack.

Cystoscopy, July 25. Bladder urine contained four pus cells to the high power field, many bacilli. There was a slight basal cystitis. Ureteral orifices were definitely larger than the average normal, the right more so than the left. Left urine and culture were negative, right urine showed a few pus cells, culture B. Coli. Phthalein output on the left side in fifteen minutes was 21 per cent, on the right, 4 per cent, bladder collection 6 per cent. Right pyelogram outlined a slightly dilated double pelvis with the ureter moderately dilated all the way to the bladder.

It was advised that no further cystoscopic treatments be given unless the pyuria persisted or there were further febrile attacks. Up to October 8, 1927, there had been no more attacks and the urine was then pus free. It seemed fairly certain that the small meatus had been responsible for the persistence of the pyelitis.

Case VIII. Pyelitis Secondary to Abscessed Teeth and Infected Tonsils.—C. D., boy, aged six, was admitted November 28, 1924. During the preceding four months urination had been abnormally frequent, the urine cloudy and once, for several days, grossly bloody. He had had no abdominal pain, no chills, his general condition had remained unchanged. Two abscessed teeth had been removed in 1923; he had had no acute tonsillitis.

On admission he was found to have six abscessed teeth and slightly infected hypertrophied tonsils. Urine showed much pus, a few

red blood cells, no casts, a trace of albumin. Bladder cultures, and stains for tubercle bacilli, were negative; a few cocci and bacilli were found. A cystogram was normal as were X-ray films of the urinary tract. During a fifteen day stay in the hospital his temperature ranged between 99° and 100°. Tonsils and abscessed teeth were removed. At the time of his discharge urine showed no improvement. Six weeks later he was free of all symptoms. The urine was clear, contained neither pus nor blood. Sixteen months after admission he had gained twenty-five lbs., the urine was normal.

These cases, I think, support the attitude advocated at the beginning of this paper. Nothing is further from my mind than to urge routine cystoscopy immediately a diagnosis of pyelitis or pyuria is made. Precipitate cystoscopy should be decried for the adult and even more so for the child.

Short of cystoscopy much valuable information may be easily obtained by X-ray examinations, cystograms, investigation for residual urine, bacteriological study of the catheterized urine, estimations of renal function, and so on. But it should be stated that cystoscopy itself in children is not the very difficult procedure that many possibly believe. The female urethra gives practically no trouble. The improved cystoscopes of modern instrument makers steadily lower the age at which the male urethra may be penetrated without undue trauma. Once the bladder is entered, the examination goes along with relatively the same ease as in the adult. A general anesthetic will be necessary in many cases and, when required, should cause no more hesitation than in other situations where such aid is requisite for accurate diagnosis or rational treatment.

Patients of the type of Case 8 are much more frequently seen than most of the others here reported and should be handled accordingly. No doubt the large proportion of children with pyelitis clear up under an appropriate medical regime. But cases failing to respond in a reasonable period or presenting unusual features, should not be denied the benefits of the thorough urological study sought without question for the adult having similar symptoms. The child can no more outgrow urinary tract infection in the presence of stasis than the adult.

References.

1. Stevens, W. E., Diagnosis and Treatment in Pathological Conditions of the Urinary Tract in Children. *J. A. M. A.* 77:1081. (Oct. 1), 1921.
2. Kretschmer, H. L. Urological Surgery in Pediatrics. *J. A. M. A.* 70:286. (July 22), 1922.
3. Bugbee and Wollstein. Surgical Pathology of the Urinary Tract in Infants. *J. A. M. A.*, 83:1887. (Dec. 13), 1924.
4. Caulk, Jno. R. Urological Problems in Children. *South Med. Jour.* 19:351. (May), 1926.
5. Hunner, Guy L. Ureteral Stricture and Chronic Pyelitis in Children. *Trans. Southern Surg. Assoc.*, p. 41, 1926.

CLINICAL OBSERVATION OF PYURIA IN INFANCY AND CHILDHOOD: AN ANALYSIS OF THIRTEEN CONSECUTIVE CASES.*

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The presence of pus in the urine is significant of infection somewhere in the genito-urinary tract and to designate the condition by calling it pyelitis, pyelonephritis or pyelocystitis is attempting a diagnosis on insufficient data. Other observers, Helmholz[1] in particular, have called attention to this and the writer merely wishes to reiterate the wisdom of this nomenclature. Only those cases in which uncentrifuged specimens showed four or more pus cells (singly or in clumps) under high power microscopic fields for a period of five days or longer, were classed as pyuria. Routine urinalyses were made on all infants and children upon admission to Bellevue Hospital and whenever any patients had an unexplained fever. The thirteen cases here reported represent .4 per cent of the total male admissions (703) and 1.6 per cent of the total female patients (629) or .9 per cent of the total admissions (1,332) over a period of nine months (October 1, 1925 to July 1, 1926).

There appear to be two types of pyuria—primary and secondary: the former, the ordinary type of pyuria in which the disturbance is primarily a urinary one; the latter, as its name implies, is secondary to infection elsewhere in the body. The two groups of cases are equally represented in this series.

The great majority of cases of pyuria occurred in females, the proportion being about four to one. The ages ranged from four months to nine years. Two patients gave a previous history of a similar infection. Exposure to cold, previous ill health, intestinal

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derangements, rickets, secondary anemias and malnutrition appear to be predisposing factors. In the majority of cases, the apparent exciting cause could be traced to foci of infections which are in order of their frequency, infections of the tonsils, nasopharynx and middle ears.

No postmortem examinations were made on the fatal cases as permission for autopsy could not be obtained. Helmholz[2] has secured much information along this line in his experimental work on rabbits. As to whether the pyuria is due to an ascending or hematogenous infection, he[3] has shown that by cross section of kidneys (in animals previously injected with bacteria by intravenous and intracystic methods) it was possible to localize certain processes of infiltration which characterized the source of infection. Intravenous lesions tend to localize in the kidney substance and in the papilla and adjacent lining of the pelvis, while intracystic injections give rise to lesions localizing in the small finger-like projections of the parietal wall of the pelvis. A number of pathological examinations by various men have failed to show any inflammation of the kidney pelvis or ureter, though repeated urinalyses showed much pus to have been present. Since few cases ever come to autopsy, very little is known of the pathology of pyuria in infants and children. Recently, Chown[4] has advanced the opinion that pyuria is most commonly a result of suppurative nephritis and suggests the use of that term in place of pyelitis, pyelonephritis, pyelocystitis or pyuria. Schloss[5] has been unable to find inflammation limited to the kidney pelvis and believes like Chown that the pyuria is in reality a suppurative nephritis.

The classical text book symptoms[6] were not the rule in this series. In the primary pyurias there were very little marked constitutional upsets, the main symptoms being fever, usually intermittent, and pain in the legs or abdomen. Two of the children complained of dysuria. Of the six primary type of cases there was only one patient who had repeated chills. In the secondary pyurias there were likewise seen intermittent septic temperatures, but more constitutional upsets. The commoner manifestations in order of their frequency were cough, coryza, vomiting, anorexia and fretfulness. In no case could the parents point to the exact time or even approximate time of onset, nor was there a history of convulsions, twitchings or "blue spells". The symptoms associated with secondary cases might have been due to the foci of infections as well as to the pyuria.

Other than the finding of foci of infections, the routine physical examinations proved unhelpful in the diagnosis. The majority of the patients did not appear acutely ill. In three cases there were positive intradermal tuberculin reactions.

The urinary findings were of course the outstanding feature in establishing the diagnosis

Table 1—Admission Symptoms

Patient	Age	Sex	Onset	Fever	Cough	Coryza	Vomiting	Miscellaneous
P. M.	6 yrs.	F.	grad.	intermit.	.....	.....	.....	pain in chest and abdomen, frequent scant urine
E. K.	19 mos.	F.	grad.	intermit.	pos.	.....	pos.	.....
M. P.	5 mos.	F.	grad.	contin.	pos.	pos.	pos.	.....
V. L.	1 yr.	F.	grad.	absent	.....	.....	.....	.....
S. S.	8 yrs.	F.	grad.	absent	.....	pos.	.....	lump in left groin
F. G.	3 yrs.	F.	grad.	intermit.	.....	.....	.....	hematuria, pain in legs, dazed
F. G.	3 yrs.	F.	grad.	intermit.	pos.	.....	.....	dysuria
B. H.	18 mos.	F.	grad.	contin.	.....	.....	.....	listless
J. A.	9 mos.	F.	grad.	absent	.....	.....	.....	.....
W. P.	4 mos.	M.	grad.	contin.	.....	.....	.....	.....
A. G.	5 mos.	M.	grad.	intermit.	.....	.....	.....	.....
I. D.	9 yrs.	F.	sudden	intermit.	.....	.....	.....	repeated chills, pain in left side of abdomen, dysuria
C. P.	6 mos.	M.	grad.	intermit.	.....	.....	.....	swelling of face and body, pale

Table 2.—Positive Physical Findings on Admission

Patient	Acutely Ill	Facies	Rickets	Anemia	Edema	Otitis Media	Rhinitis	Pharyngitis	Tonsillitis	Pneumonia	Abdomen	Adenitis	Irritated Genitals
P. M.	pos.	anxiety	.....	.....	.....	pos.	.....	.....	pos.	lobar	.....	.....	.....
E. K.	.....	.....	.....	.....	.....	pos.	.....	pos.	pos.	.....	.....	pos.	.....
M. P.	pos.	.....	.....	.....	.....	.....	pos.	pos.	pos.	.....	.....	pos.	.....
V. L.	.....	.....	pos.	.....	.....	.....	.....	pos.	.....	.....	.....	.....	.....
S. S.	.....	excited	.....	.....	.....	.....	pos.	.....	pos.	.....	.....	.....	.....
F. G.	pos.	apathy	.....	.....	.....	.....	.....	pos.	pos.	.....	.....	pos.	.....
F. G.	pos.	.....	.....	.....	.....	.....	.....	pos.	pos.	.....	.....	pos.	.....
B. H.	pos.	.....	pos.	pos.	.....	.....	.....	.....	pos.	.....	distended, liver and spleen palpable	.....	.....
J. A.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
W. P.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	pos.
A. G.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
I. D.	.....	.....	.....	pos.	.....	.....	.....	.....	.....	.....	.....	pos.	.....
C. P.	.....	.....	pos.	pos.	pos.	.....	.....	.....	.....	.....	.....	.....	.....

of pyuria. Catheterized specimens were obtained from female patients. Urinalyses showed for the most part clear, acid urines of normal specific gravity with the faintest possible trace to a heavy trace of albumin, and in uncentrifuged specimens four to one thousand pus cells per high power microscopic fields, usually singly, but occasionally in clumps of one to four cells. In uncentrifuged specimens of normal infants or children only an occasional pus cell was observed to high power fields. There appeared to be no definite or fixed relation between the qualitative estimation of albumin and the number of pus cells. It was found that centrifuged specimens contained about eight to ten times more pus cells than uncentrifuged urine.

Table 3.—White Blood Cell Counts

Patient	Leucocytes	Polys.	Lymphocytes
P. M.	8,200–20,400	56–90%	10–44%
E. K.	14,000–29,200	58–78	22–42
M. P.	20,800	60	40
V. L.	20,000	73	27
S. S.	8,600	34	66
F. G.	9,800–15,400	61–75	25–39
F. G.	8,400	56	44
B. H.	40,000	80	20
J. A.	10,200–23,600	57–60	40–43
W. P.	15,000–17,500	70–89	11–30
A. G.	31,200	51	49
I. D.	9,000	80	20
C. P.	4,600–17,800	30–70	30–70

White blood counts in the majority of cases showed a leukocytosis varying from twelve to eighteen thousand cells in uncomplicated cases. The differential counts showed 50 to 70 per cent of polymorphonuclears and 30 to 50 per cent of lymphocytes.

Blood chemistry revealed a slightly high non-protein nitrogen (32-53 mgs.) in six cases, a slightly increased uric acid (4-8 mgs.) in six cases and a low cell volume (15-33 per cent) in all but two cases. Acetone was greatly increased in the majority of cases.

One patient had a positive blood culture (staphylococcus) while four patients' urine on culture showed an organism having the characteristic of the colon bacillus. Helmholz[7] found sterile cultures in one-third to one-half of normal infants' urine. He[8] also found that the growth of the colon bacillus apparently is the result of a favorable media produced by the lowering of the resistance of the individual rather than by a specific tendency on the part of the microorganisms (staphylococcus or streptococcus) found in the upper respiratory tract, to localize in the kidney and prepare the soil for the colon bacillus.

Of three patients cystoscoped, all showed involvement of one ureteral orifice. In one case, a female age nine months, the smallest ureteral catheter (number 4 F.) could not be passed into the ureteral opening. Another patient, a female age six years, showed an enlarged ureter on the right side and many pus cells in a specimen from that side. The third child's ureters were normal. In the first two cases there was a delay in the appearance and the

Table 4.—Blood Chemistry

Patient	N. P. N.	Uric Acid	Chlorides	Cell. Vol.	CO_2	Sugar	Acetone	Miscellaneous
P. M.	.....	.....	.....	.....	.....	.....	.....	.....
E. K.	24.0	1.0	550	35.0	.....	.....	.....	.....
M. P.	27.0	2.0	550	33.0	.....	.....	.....	Ph. 7.8
M. P.	38.0	2.3	527	34.0	61.4	96.0	0	.....
M. P.	.....	6.7	.....	.....	.....	57.0	.....	.....
M. P.	36.0	6.7	386	.....	84.4	.....	plus 4	.....
M. P.	.....	.....	WB. 374	.....	.....	.....	.....	.....
V. L.	.....	.....	.....	.....	.....	.....	.....	.....
S. S.	.....	.....	.....	.....	.....	.....	.....	.....
F. G.	.....	2.7	527	29.0	51.0	97.0	plus 2	.....
F. G.	.....	.....	.....	.....	.....	.....	.....	.....
B. H.	.....	1.0	585	19.0	.....	.....	.....	Ca. 10.1; Plas Prot. 8.2; Vandenberg: direct, neg. and indirect, ft. pos.
J. A.	34.0	2.0	550	33.0	39.5	85.0	plus 1	Phos. 4.7
W. P.	30.0	4.0	562	25.0	35.7	.....	plus 2	Phos. 3.45
A. G.	53.5	8.0	608	.....	43.3	.....	0	Creatine 1.8
A. G.	47.0	7.0	550	.....	44.3	114.0	plus 1	Ca. 7.3; Phos. 2.9
I. D.	.....	.....	.....	.....	.....	.....	.....	.....
C. P.	32.0	6.1	632	15.5	.....	87.0	plus 2	Serum Prot. 5.4; Cholesterin 83

concentration of indigo-carmine, while in the other case a normal result was obtained.

X-ray examinaton in all cases was not helpful in establishing the diagnosis or the source of the infection, but in two cases that occurred about a year before this study was attempted, stones were diagnosed solely by the X-ray.

Pyuria is often spoken of as a self-limiting disease. Two of the cases in this series cleared up before treatment could have possibly had time to act, but the majority were very resistant to medical treatment. The primary types of pyuria observed were in four cases diagnosed solely on the rontine urinalysis. One patient, a female infant of five months, was very resistant to treatment and developed convulsions from an apparent alkalosis which was probably the result of large doses of alkalis over a long period of time. That infant had a persistently high temperature and large number of pus cells in the urine despite a continued alkalinity of the urine. She was admitted to Bellevue Hospital on October 6, 1925, on account of intermittent fever, a cough, a cold and vomiting. These symptoms extended over a period of seven days. The family history was negative and the patient's past history was likewise negative except for a mild diarrhea three weeks previously. On examination the infant was found to have an inflammation of the tonsils and nasopharynx and moderately enlarged anterior cervical glands. The temperature on admission was 100.2 F. per rectum. Laboratory findings showed 14,000 leukocytes with 78 per cent polymorphonuclears and 20-30 pus cells per high power microscopic field in an uncentrifuged specimen of urine. Alkaline therapy consisting of sodium citrate grains 30-60 with sodium bicarbonate grains 30-180 was given for eleven days, then urotropin grains 12 and an equal amount of acid sodium phosphate were used for five days after which time sodium citrate grains 80 and sodium bicarbonate drams 4 were again administered until convulsions occurred on November 5th. In spite of all treatment, the urine continued to be loaded with pus cells and its reaction was acid the majority of the time. The temperature remained high with very little remission. Blood chemistry showed a non-protein-nitrogen of 27-38 mgs., uric acid of 2.0—6.7 mgs., a CO_2 of 61-84 per cent, and on November 5th, four plus acetone. On November 4th, the infant became toxic with development of bronchopneumonia and on the next day a convulsion was observed. The convulsion recurred November 6th, the date of the infant's death.

The majority of the cases ran intermittent types of temperatures with daily remissions, and in two cases only was a sudden drop to normal seen; however, after the urine had been alkaline for severel days the temperatures were lowered temporarily. Most of the patients appeared to be more cheerful and playful after the urine had become alkaline.

Treatment

Diet: Children were first given a liquid diet for three to five days, after which time a soft diet was given then several days later a general diet was begun. Infants' formulas were diluted one-fourth to one-third as long as their temperatures remained high. After there was a lowering of temperature of after much loss in weight was observed, they were fed on more concentrated formulas and those over six months were given cereals, purees, soups, vegetables and the other usual infant foods.

Rest: The older children were kept in bed as long as their urine showed evidence of much pus or their temperature remained higher than 100 F. per rectum.

Fluids: In all cases fluids were forced as much as possible and occasionally hypodermoclyses were given.

Medication: The alkalis were the drugs of choice and were used first in the majority of cases; they consisted of sodium and potassium citrate and sodium bicarbonate. The usual dose of sodium citrate was gains 10-40 (3-8 times daily); potassium citrate grains 5-15 (3-6 times daily); and sodium bicarbonate grains 10-40 (3-8 times per day). The largest daily dose of each was sodium citrate drams 4; potassium

Table 5.—Urinary Drugs
A. Alkalis

Patient	Sodium Bicarbonate				Sodium Citrate			
	Dose in Grains	Largest Dose	Days Used	Amount Used	Dose in Grains	Largest Dose	Days Used	Amount Used
P. M.	20–30 (6)	30 (6)	45	Oz. 14.6	15 (6)	15 (6)	9	Oz. 1.1
E. K.	30 (6)	30 (6)	17	Oz. 6.36	...	...	...	...
M. P.	10–30 (3-8)	30 (8)	26	Oz. 8.75	10 (3-8)	10 (8)	11	Oz. 1.2
V. L.	20 (12)	20 (12)	8	Oz. 4.0	...	...	...	...
S. S.	20 (6)	20 (6)	3	Dr. 6.0	...	...	...	...
F. G.	20–40 (6)	40 (6)	26	Oz. 10.36	20–40 (6)	40 (6)	7	Oz. 3.75
F. G.	...	...	...	...	...	...	...	...
B. H.	20 (6-8)	20 (8)	10	Oz. 3.25	5–10 (6-8)	10 (8)	23	Oz. 3.05
J. A.	10–30 (6)	30 (6)	40	Oz. 11.5	10 (6)	10 (6)	8	Oz. 1.0
W. P.	10–20 (3-6)	20 (6)	9	Oz. 1.6	...	...	...	...
A. G.	15–20 (6)	20 (6)	7	Oz. 1.6	...	...	...	...
I. D.	...	...	...	...	...	...	...	...
C. P.	20 (3-6)	20 (6)	2	Dr. 3.0	...	...	...	...

NOTE—Figures in parenthesis after dose in grains indicate number of times per day the drug was given.

Table 5.—Urinary Drugs
A. Alkalis

Patient	Potassium Citrate				Potassium Acetate			
	Dose in Grains	Largest Dose	Days Used	Amount Used	Dose in Grains	Largest Dose	Days Used	Amount Used
P. M.	5–15 (6)	15 (6)	15	Oz. 1.5	...	...	...	...
E. K.	10 (6)	10 (6)	1	Dr. 1.0	...	...	...	...
M. P.	10 (3)	10 (3)	3	Dr. 3.1	...	...	...	...
V. L.	...	...	...	...	...	...	...	...
S. S.	...	...	...	...	...	...	...	...
F. G.	...	...	...	...	...	...	...	...
F. G.	...	...	...	...	...	...	...	...
B. H.	...	...	...	...	...	...	...	...
J. A.	10 (6)	10 (6)	29	Oz. 3.6	...	...	...	...
W. P.	10 (3-6)	10 (6)	9	Oz. 1.0	...	...	...	...
A. G.	...	...	...	...	...	...	...	...
I. D.	...	...	...	...	5 (3)	5 (3)	7	Dr. 1.75
C. P.	...	...	...	...	...	...	...	...

Table 5.—Urinary Drugs
B. Antiseptics

Patient	Dose in Grains	Largest Dose	Days Used	Amount Used	Drug Used
P. M.	.....	.....	.....	.....	.....
E. K.	2-10(4-6)	10 (4)	7	Dr. 2.3	Urotropin
	2-10(4-6)	10 (4)	7	Dr. 2.3	Acid Sod. Phos.
	1 (3)	1 (3)	5	Gr. 15	Methyl. Blue
M. P.	2 (6)	2 (6)	6	Dr. 1.1	Urotropin
	2 (6)	2 (6)	6	Dr. 1.1	Acid Sod. Phos.
V. L.	.....	.....	.....	.....	.....
S. S.	.....	.....	.....	.....	.....
F. G.	.....	.....	.....	.....	.....
F. G.	.....	.....	.....	.....	.....
B. H.	2 (3)	2 (3)	16	Dr. 1.6	Salol.
J. A.	2 (3)	2 (3)	3	Gr. 18	Urotropin.
	5 (3)	5 (3)	3	Gr. 45	Acid Sod. Phos.
	0.5 (3)	0.5 (3)	7	Gr. 10.5	Methyl. Blue
W. P.	2 (3)	2 (3)	14	Dr. 1.3	Urotropin.
	5 (3)	5 (3)	14	Dr. 3.75	Acid Sod. Phos.
A. G.	.....	.....	.....	.....	.....
I. D.	.....	.....	.....	.....	.....
C. P.	.....	.....	.....	.....	.....

citrate grains 80; and sodium bicarbonate drams 4, while the largest total dose was sodium citrate ounces 3 (for twenty-three days); potassium citrate ounces 3.5 (for twenty-nine days); and sodium bicarbonate ounces 14.5 (for forty-five days). Patients were kept on alkali therapy till improved or until their urine had been alkaline for one to two weeks. In the majority of cases it required three to six days to alkalinize the urine, and even after alkaline for three to fifteen days, no effect was frequently observed on the number of pus cells. Temperatures were brought to normal in one-half of the cases and remained thereabout, but no effect was noted in one-third of the cases. It required drams 4.5-13 of sodium citrate (for 6-11 days); drams 4-16 of potassium citrate (for 5-10 days); and ounces 0.5-5.4 of sodium bicarbonate (for 5-12 days) to render the urine alkaline, but to keep it so the majority of the time, the following amounts were used, sodium citrate grains 80-90; potassium citrate grains 30-60; and sodium bicarbonate drams 3-4. The two citrates were used at separate times and as a rule grains 5-20 of each, plus 10-40 grains of sodium bicarbonate were administered three to eight times daily. The urine of one case never became alkaline although drams 1.5-2.0 of sodium bicarbonate was given daily for a period of seven days. When difficulty was experienced in keeping the urine alkaline, it was found that the administration of the alkali throughout the entire twenty-four hours usually gave the desired result. In those cases that responded poorly to alkali therapy, urotropin grains 2-10 (3-6 times daily) plus an equal amount of acid sodium phosphate was given for 3-14 days. Apparently that urinary antiseptic was unsuccessful. No attempt was made to determine the strength of the formaldehyde present in the urine or to determine the hydrogen-ion concentration. Helmholz[9] found that the formaldehyde was never present in a concentration

Table 6.—Effect of Alkali Therapy on Temperature and Urine

Patient	Days in Hospital	Temperature Variation	Temperature		Number of Days Before Urine Cleared Up
			High	Low	
P. M.	79	High for 1½ mos. then normal.	104.2	98.0	37 (but pus cells returned after alkalis were withdrawn.)
E. K.	28	Normal as long as urine was alk.	103.5	98.0	always some pus cells.
M. P.	31	Temporarily normal at first but high majority time.	106.0	98.4	always some pus cells.
V. L.	20	Temp. practically normal all time but urine was acid.	102.8	98.0	6 (but pus cells returned once for 3 days then disappeared again).
S. S.	6	Normal before use of alkalis and remained normal.	102.8	98.0	3 (patient left hospital against advice of visiting physicians).
F. G.	36	Normal after 1-2 days.	105.5	98.0	always some pus cells.
F. G.	8	No alkalis used but temp. became and remained normal after 1 day.	104.0	98.0	3 (pus cells returned only once).
B. H.	30	No effect.	104.5	99.5	always some pus cells.
J. A.	70	Normal after many weeks then urine was not constantly alkaline.	105.5	96.0	always some pus cells.
W. P.	27	Alkalis had no effect.	106.0	95.0	always some pus cells.
A. G.	8	Alkalis had no effect.	106.0	98.4	always some pus cells.
I. D.	12	Normal all time.	100.4	97.2	2 (but pus cells returned then cleared up after 12 days).
C. P.	9	Alkalis had no effect.	106.0	96.4	always some pus cells.

TABLE 7.—ALKALIS USED TO RENDER AND TO KEEP URINE ALKALINE

	Total Amount to Render Urine Alkaline			Daily Dose to Keep Urine Alkaline		
Patient	Pot. Cit.	Sod. Cit.	Sod. Bicarb.	Pot. Cit.	Sod. Cit.	Sod. Bicarb.
P. M.	.....	.....	Oz. 4.5 (12)	Dr. 1.0	Dr. 1.5	Dr. 3.0
E. K.	.....	.....	Oz. 1.8 (5)	.....	.....	Dr. 3.0
M. P.	Dr. 0.5 (1)	Dr. 4.5 (6)	Oz. 2.5 (11)	.....	Dr. 1.3	Dr. 4.0
V. L.	.....	.....	Oz. 1.5 (3)	.....	.....	.....
S. S.	.....	.....	Oz. 0.7 (3)	Dr. 1.0	.....	Dr. 2.0
F. G.	Oz. 2.0 (7)	.....	.....	.....	.....	Dr. 3.0
F. G.	.....	.....	.....	.....	.....	.....
B. H.	.....	Oz. 1.6 (11)	Oz. 1.3 (4)	.....	.....	.....
J. A.	Oz. 1.2 (10)	.....	Oz. 1.2 (10)	Dr. 1.0	.....	Dr. 3.0
W. P.	Oz. 0.5 (5)	.....	Oz. 0.5 (5)	.....	.....	.....
A. G.*	.....	.....	Oz. 1.6 (7)	.....	.....	.....
I. D.**	.....	.....	.....	.....	.....	.....
C. P.*	.....	.....	Oz. 0.4 (2)	.....	.....	.....

*Urine did not become alkaline.
**Potassium Acetate Dr. 1.7 (3) used but urine was alkaline before the drug was administered. Urine remained alkaline on Gr. 15 per day.
Figures in parenthesis denote the days the drug was given.
Figures underlined indicate the dose was not quite sufficient to keep the urine alkaline.

greater than 1:20,000 and that it usually was less than 1:100,000. Shohl and Deming,[10] Burnam[11] and others have insisted that in order to get the desired results with urotropin, it was necessary for the formaldehyde to be present in a concentration of 1:20,000 or 1:30,000. Helmhloz[9] has found that if the acidity of the urine is kept between Ph. 4.6-5.0, the growth of bacteria is inhibited. He also noted that a more beneficial effect results when the urine is quickly changed from alkaline to acid than from acid to alkaline. The Ph. 4.6-5.0 as observed by Helmholz seemed to favor the formation of formaldehyde from urotropin. The large doses of urtropin (grams 4-6 daily) plus calcium or ammonium chloride (grams 4-12 daily) for pyuria as recommended by Helmholz[9] were not used. He only recommends the large doses of those drugs in chronic pyuria and then only when large quantities of water are taken, for when it is difficult to get an infant to take water in large amounts, hematuria results.

Besides urotropin, methylene blue grain ½ three times daily for 5-7 days had no beneficial effect on the pus cells or the temperature in two instances in which it was employed. Another urinary antiseptic, hexylresorcinol, was used in dram doses three times daily for two patients, but since it gave rise to vomiting each time it was used, the drug was discontinued before any definite information could be obtained concerning its value. Another patient was given salol grains 6 daily for sixteen days but no beneficial effect was noted from the use of salol.

In three cases transfusion of whole blood was given, the usual 10 cc. whole blood per pound of body weight being used. One patient received two transfusions and developed erythema multiforme following the first injection and all three had high temperatures following the transfusions. One infant lived three days following the only transfusion, another lived two days while the third child passed out on the second day after its second transfusion. In all instances one of the parents was the donor and each time the donor's and recipient's blood matched.

Intestinal derangements (diarrhea and constipation) had little influence on the temperature but in five cases that had such upsets, an elevation of temperature resulted.

Five of the thirteen cases died. Of that number three were males and two females, all under two years of age. Two patients were transferred unimproved to a contagious hospital on account of measles. Of the remainder, two were discharged clinically well, and four definitely improved. All patients that left the hospital were advised to go to the out-patient department at weekly to monthly intervals for observation since pyuria is known to recur so frequently.

SUMMARY AND COMMENT

The frequency of pyuria appears less than some writers claim, while the ratio of females

to males is identical with that observed by the majority, namely, four female cases to one male case. The disposition of the three male infants in this small series of cases, reveals the fact that pyuria in very young male infants is a very severe infection. The use of the word pyelitis is a misnomer and in its place pyuria should be employed until a better term

Table 8.—Disposition of Cases

Patient	Age	Sex	Outcome
P. M.	6 yrs.	F.	improved
E. K.	19 mos.	F.	improved
M. P.	5 mos.	F.	died
V. L.	1 yr.	F.	improved
S. S.	8 yrs.	F.	improved
F. G.	3 yrs.	F.	unimproved (transferred to another hospital account measles)
F. G.	3 yrs.	F.	clinically well
B. H.	18 mos.	F.	died (transfused)
J. A.	9 mos.	F.	unimproved (transferred to another hospital account of measles)
W. P.	4 mos.	M.	died (tranfused)
A. G.	5 mos.	M.	died
I. D.	9 yrs.	F.	clinically well
C. P.	6 mos.	M.	died (transfused)

can be agreed upon. Sole reliance for diagnosis is the microscopic urinary examination, for the bizarre symptoms and the physical findings (other than foci of infections in secondary cases) are of little help. The X-ray may be the only means of diagnosing stones or of locating the source of the pus. If pyuria is the result of a suppurative nephritis as Chown[4] and Schloss[5] believe, one would naturally expect to find some evidence of nitrogen retention. The blood chemistry findings in this series of cases and in eleven cases of pyuria studied by Wilcox and Lyttle[12] showed nitrogen retention. Wilcox and Lyttle believe the retention in pyuria and also in the majority of acute infections is due to a simple impairment or depression of the kidney function, though frequently they were unable to rule out the possibility of nephritis. The pathology of pyuria is still to be established beyond question. White blood counts per se are of little material use in helping one to arrive at the diagnosis. Red blood cell counts and cell volume figures point to a secondary anemia in the cases in which such tests were made. The treatment as yet has not proven as satisfactory as hoped for, with alkali therapy still the treatment of choice, unless vaccines or the large doses of urotropin with calcium or ammonium chloride as advocated by Helmholz[9] prove more efficient. All chronic cases that fail to respond to medical treatment should have the advantage of cystoscopic examination and treatment.

I am indebted to Dr. Charles Hendee Smith, Director of the Children's Medical Division of Bellevue Hospital, New York City, and to Dr. John D. Lyttle, Director of The Research Laboratory of the same division of Bellevue Hospital, for permission to use the material on which this study was made. I also wish to thank Dr. Lester Rosenberg, of Brooklyn, N. Y., a former Intern on the Children's Medical Division of Bellevue Hospital, and Dr. John D. Lyttle for their suggestions in the preparation of this paper.

Bibliography.

1. Helmholz, Henry F.: Pyuria in Infancy and Childhood. *J. Lancet*, (Nov. 15), 1922.
2. Helmholz, Henry F., and Beeler, Carol: Experimental Pyelitis in the Rabbit. *J. A. M. A.*, 69:898 (Sept. 15), 1917.
3. Helmholz, Henry F.: The Pathological Changes in Experimental Ascending and Hematogenous Pyelitis. *J. Urology*, 8: (Oct.), 1922.
4. Chown, Bruce: Pyelitis in Infancy—A Pathological Study. *Canad. M. A. J.*, p. 549 (May), 1926.
5. Schloss, Oscar M.: The Anatomic Lesion of So-Called Acute Pyelitis of Infants. *Am. J. Dis. Child*, 34:318, (Aug.), 1927.
6. Holt, L. Emmett, and Howland, John: The Diseases of Infancy and Childhood, Ed. 8, New York. D. Appleton & Co., 1922, p. 617.
7. Helmholz, Henry F., and Millikin, Frances: The Bacteriology of the Normal Urine. *Am. J. Dis. Child*, 23:309 (April), 1922.
8. Helmholz, Henry F., and Millikin, Frances: The Relation of Infections of the Upper Respiratory Tract to Pyelitis. *J. A. M. A.*, 81:1160 (Oct.), 1923.
9. Helmholz, Henry F., and Millikin, Frances: An Experimental Study of Therapeutic Procedure in Pyelocystitis, *Am. J. Dis. Child*, 28:700 (Dec.), 1924.
10. Shohl, A. T., and Deming, C. L.: Hexamethylenamin: Its Quantitative Factors in Therapy. *J. Urology*, 4:419-437 (Oct.), 1920.
11. Burnam, Curtis F.: An Experimental Investigation of the Value of Hexamethylenamin and Allied Compounds, *Arch. Int. Med.*, 10:324-334 (Oct.), 1912.
12. Wilcox, Herbert B., and Lyttle, John D.: Kidney Function in Acute Disease. *Am. J. Dis. Child*, 26:195-210 (Sept.), 1923.

West End Medical Building.

DISCUSSION OF PAPERS OF DRS. DODSON, KEYSER, NEFF AND MCGEE.

DR. HERBERT C. JONES, Petersburg:—I think the interest that has been shown and the attention that has been given these papers intimates the high regard with which they have been received. Dr. Dodson's paper was especially interesting to me in the fact that his third case gave a history of having been sick over two years. I personally saw this case, though I did not see him in his original illness. He had an attack of hematuria that lasted two days, then went two years and thought himself well. Gentlemen, if that man had been recommended for cystoscopy in his original illness the chances are that he would today be well and happy; as it is, the outlook is bad. I think if a patient has hematuria that patient should be investigated at once. This idea is brought out by Casper in an article reporting 242 cases of cystoscopies after early hematuria. In all but three cases he found bladder tumors. Of course, the chances then of permanent relief were very good. Another important point is that nine out of ten bladder tumors in the beginning are benign. The big thing, as I see it, is an early diagnosis, and that can only be done if the doctors will recommend them.

Dr. Dodson spoke in case one about incrusted cystitis. He made the statement that he was able to get the urine acid. I should like to have him tell us how he did that. That has been a problem with me on one or two occasions.

I enjoyed Dr. Keyser's paper very much. I heard Dr. Hunner talk in New York very recently, when he was expressing the idea that it was not necessary to have dilatation above the supposed stricture, to make a diagnosis of ureteral stricture. If you go out to Mayo's you will find that is absolutely contrary to their line of thought. Dr. Keyser has acknowledged that ureteral stricture does exist and that we should make dilatation when we suspect a stricture. I think we should be very cautious in making a diagnosis of ureteral stricture, because it is likely to bring the cystoscopist into disrepute if the diagnosis is not well founded.

DR. CHAS. E. CONRAD, Harrisonburg, discussing Dr. Neff's paper: I think we are to be congratulated on having such a splendid paper presented to us on a subject in which the general practitioner and pediatrician are so interested.

Pyuria is a condition which we see often, and many times get such poor results after careful treatment. It is these cases we treat for months that should be referred to the urologist. I feel they should be treated for at least six months medically unless there is special reason to refer earlier.

Then another important item is to have a competent urologist who has worked with children. Urologic problems in infancy and early childhood resembles similar problems in adult life, but the tissues are much more easily traumatized and trauma may lead to a general septicemia. When carefully done, this should not stand in the way of a complete urological examination. Case 4 referred to in Dr. Neff's paper I treated for ten months, using alkalies, forced fluid and large doses of hexamethylene, but did not get any results. After being under my care five months, I advised the father of the child to take him to Dr. Neff, but was unable to persuade him to go until ten months after I first saw him, and you can see from his report that good results would never have been obtained.

I feel some of these cases of chronic pyelitis, especially with severe anemia, should be given the benefit of transfusion, as I have seen several severe cases recover from the anemia, and also the pyelitis after transfusion.

In regard to cases like case 8, Helmholz and Milliken express the theory that infection of the nose and throat lowers the resistance of the patient to such an extent that the colon bacillus is permitted to acquire a foothold in the urinary passages when it sets up an inflammatory reaction and that the actual bacteria of the primary infection in the upper tract does not actively cause the secondary pyelitis, since the colon bacillus is almost invariably found in the urine. As you will note from the paper under discussion, there are certain types of kidney infections which can only be properly diagnosed by careful and complete urologic study, it becomes necessary to refer such cases to a really competent urologist.

Again I wish to congratulate Dr. Neff on his presentation of this interesting and perplexing subject.

DR. W. B. MCILWAINE, Petersburg: In discussing Dr. McGee's paper there are one or two very striking statements which, as he says, have not been thought heretofore. It is remarkable in Bellevue Hospital that in something over one thousand cases they had only thirteen cases of what we would call pyelitis. In almost any active practice you see at least fifty in a year, as I have discussed with many men, so the striking number of thirteen out of over a thousand cases admitted to Bellevue in over nine months is remarkable. Perhaps we are not diagnosing cases correctly, but we diagnose them in the same way—that is, by pus in the urine and so many pus cells in a certain area under a high power microscope. Why the difference, I do not know, but I was astounded when I saw they had only thirteen cases.

Another interesting fact is that out of the thirteen cases five died. I have seen only one man who had a case of pyelitis in a child to die in his private practice. I always tell the mother I have never seen a case of pyelitis die. When you consider that five out of thirteen in Bellevue Hospital died, there is something remarkably funny about the whole situation. I admit that we probably do not go into our cases quite as carefully, but we certainly diagnose pyelitis and certainly have a high percentage of pyelitis in private practice. Probably it is accounted for by the fact that so many cases of pyelitis do not go to Bellevue Hospital or any other hospital; it is only the very severest cases that get there. But these facts are striking, and I think that we should ponder them.

In infants I think probably lots of cases of pyelitis so-called are probably cystitis. I think those cases with a great deal of pain, straining, etc., probably have cystitis rather than pyelitis. Yet Dr. Neff asked, in discussing this with me, why they have temperature. We seldom get a temperature from cystitis.

Dr. McGee says the men are beginning to call it a purulent nephritis. That is a little new to me. I do not know how you would diagnose a nephritis if you have none of the cardinal urinary findings of a nephritis. Nephritis, as you and I know, is diagnosed by other things than pus in the urine. If you are going to call your pyelitis purulent nephritis, how can you do it when there are no casts in the urine? It is a very interesting problem.

DR. A. I. DODSON, Richmond, discussing Dr. McGee's paper: Dr. McGee has presented a very interesting and timely paper. I believe that urinary

tract infections in infants and children have frequently been overlooked in the past and I am glad to see that the subject is receiving more attention. I believe that the method of determining the presence of infection as outlined by Dr. McGee will permit a number of cases to get by unrecognized; four cells to the high powered field in uncentrifuged urine is too strict a requirement, particularly if the child is fretful, suffers from gastro-intestinal disturbance, or has a fever.

If the infection is prolonged or has a tendency to recur, cystoscopy and irrigation of the kidney pelves is indicated. During the past year I have treated four children for prolonged and recurrent pyuria with complete relief in all four. Children stand cystoscopic treatments well and the modern instruments made especially for children permit us to carry out examinations and treatments with the same ease and precision as in the case of adults.

Just one word in closing the discussion of my paper on tumors of the bladder. I wanted to stress the fact that tumors of the bladder metastasize very late as a rule and a majority of them bleed early. The larger percentage of them are relatively benign to begin with and apparently grow rather slowly in most cases, as evidenced by the fact that in a great many instances you get a history of hematuria over a long period of time. During this last year I saw four cases that had passed beyond any help whatever, due to the fact that the appearance of blood in the urine had not aroused sufficient interest on the part of the patient or his physician to demand a thorough investigation.

Dr. L. D. Keyser, Roanoke, closing the discussion on his part: I have very little to add to what has been said except to emphasize the importance of cystoscopy in childhood. I feel keenly that in my urologic work and in that of my colleagues, we see too few children cystoscoped. Transient pyuria, if not recurrent, may be well handled medically, but unless the urinary findings become normal very, very quickly on medical treatment, the indications for cystoscopic investigation of the most complete type, are present. The pediatrist objects to the anesthetic, the urethral trauma, and the possible cystoscopic reaction. With the new instruments of the Braasch or Butterfield types, which are adapted to the child's urethra, trauma except in very small infants, may be avoided and the cystoscopic reaction as a rule is even less than that noted in adults. The occurrence of pyuria in children can doubtless be explained on the same pathological basis as it is in adults. As regards the incidence of ureteral stricture in children, I am not prepared to add to the discussion. However, from the number of hydronephroses and hydroureters that are being reported in children, I am inclined to believe that the occurrence of the condition is frequent, and autopsy findings tend to bear out the truth of this impression.

Dr. J. H. Neff, University, discussing paper of Dr. Keyser: I am in essential agreement with the views expressed in Dr. Keyser's interesting paper. With us ureteral stricture has been the most frequent cause of ureteral obstruction, outnumbering calculi two to one. Its symptoms are only too often confusing and thus productive, particularly on the right side, of incorrect diagnoses. Such facts make discussion of the subject always timely. The medical profession owes a very real debt to Dr. Hunner for the patience and insistence with which he has directed attention to ureteral strictures.

In establishing the diagnoses of stricture, I attach much importance to the reproduction by instrumentation of the patient's pain of complaint and to the securing of the characteristic hang, or hangs, by means of the bulbed catheter. Pyelo-ureterograms are frequently helpful by demonstrating dilatation. Yet I see a good many patients for whom relief is obtained by dilating a stricture even though ureteral dilatation above it could not be shown. I have little doubt that a fair number of cases diagnosed ureteral stricture actually have localized ureteral spasm, especially those who are relieved of pain so promptly when the bulb has hung only slightly and the ureter had a normal calibre above the point of hang.

I have undertaken renal sympathectomy three times during the past year. In two instances the results to date have been excellent. In the third case the renal vein was so damaged during the dissection that a nephrectomy had to be done. Two of these cases seemed to have very definite ureteral strictures but failed to respond to repeated thorough dilatation.

Dr. W. A. McGee, Richmond, closing the discussion on his part: Perhaps we diagnose pyuria too frequently by unexplained fever. The majority of cases of unexplained fever are due to pneumonia or otitis media. Perhaps counting four pus cells to an uncentrifuged microscopic field is rather high. With reference to the mortality, these cases were from poor families and treatment had been delayed. The children were in very poor condition when brought in. Practically no one has found any large number of inflamed kidney pelves, so certainly the diagnosis ought not to be pyelitis.

In reference to referring a case to a urologist after six months, I think it ought to be sooner, as Dr. Neff says.

CERTAIN PROBLEMS RELATING TO DISEASE OF THE THYROID GLAND.

By R. L. PAYNE, M. D., F. A. C. S., Norfolk, Va.

When the medical man is presented with a case of thyroid disease, the problems that are of first concern are those relating to the heart and the nervous system. I think the general practitioner who sees an occasional case of goitre, in the routine of his daily work, is first more anxious over the patient's cardiac condition, and it might be of interest to briefly consider the heart phase in thyroid disease.

Hyperthyroidism is generally accompanied by a marked increase of metabolic processes, which simply means that the rate of consumption of food and body tissues is definitely increased, and this in turn calls for a greater supply of oxygen by the lungs. Hence, tachycardia must necessarily be the first heart phase in hyperthyroidism, for, if the lungs must supply more oxygen, then the burden of the heart must be increased in its effort to transport this needed oxygen to the body tissues. Adventitous sounds are rarely present in the beginning, except in those cases having cardiac

dysfunction or disease prior to the onset of hyperthyroidism, but later on there is often present a systolic murmur which is usually functional and soon disappears if operation is done early in the disease. This clearly means that the heart mechanism is not primarily attacked by the toxemia of hyperthyroidism and that these cases can be restored to normal by prompt surgical removal of the over-productive gland tissue.

Many cases, however, with increased metabolism exist for many years without relief, and then the heart phase progresses to one of disturbed rhythm and this irregularity is, in most cases, that of auricular fibrillation. Auricular fibrillation is often of serious portent, and the general practitioner should be acquainted with the fact that this heart phase is a late development in hyperthyroidism and occurs usually in cases that have had a mild type of toxemia extending over a long period of time. Therefore, the insidious, mild types of thyroid disease are potentially the hardest on the heart, and usually the advanced cardiac disturbance is the first part of the syndrome that attracts the medical man's attention. These are not the hyperplastic or exophthalmic cases, for in this type the onset of symptoms is sudden, the progress rapid and most of our cases of this variety are brought in for surgical relief within the first year of the disease. On the other hand, the adenomatous types and those with a low grade of thyroiditis associated with increased metabolism are the treacherous cases for which we should always be on the watch. They develop slowly over a period of several years, the classical symptoms are usually wanting, and often the cardiac disturbances are the first signs that cast suspicion on the true cause of the patient's many and varied complaints.

Plummer states: "In the exophthalmic cases symptoms develop rapidly and more than half of the cases of this type seen at the Mayo Clinic came in the first year after the onset of symptoms in which the nervous system is mainly involved. On the other hand, in the adenomatous cases the toxic symptoms develop after an average lapse of fourteen years and cardiac damage then dominated the picture.

Goodall says: "Long continued mild grades of thyrotoxicosis caused more cardiac damage than a more intense thyroid intoxication for a much shorter period." At this time I wish to emphasize the point which we have observed that some adenomas of the thyroid produce cardiac disturbances before there occurs any increase in metabolism readings and these cases should be carefully and repeatedly metabolized. I recall one recent case that showed a marked tachycardia and mild tremor with associated nervous instability, yet two metabolism estimations showed a normal rate. One month later this case showed a metabolism of plus 45 and operative intervention restored this patient to health.

It is highly important that proper treatment be given these cases before serious and permanent heart injury has taken place, and, therefore, repeated heart examinations should be made in every goitre whether or not toxic symptoms or hyperthyroidism, as shown by increased metabolism, are present.

It is generally conceded from results obtained in many surgical clinics, that in about 60 per cent of these irregular heart cases the action is restored to normal by the removal of a proper amount of the over-productive thyroid gland. In those cases in which the heart action does not become regular after operation, it is often possible to improve the rhythm by the proper administration of quinidin and digitalis. However, if the heart has been permanently damaged, if there was already heart disease before the onset of hyperthyroidism or the condition is complicated by a marked arteriosclerosis, then operation may only arrest the progressive heart changes and restoration to normal cannot be expected.

Iodine

The role iodine has assumed in the treatment for goitre has now become one of our distinct problems. For many years this drug has been vaguely recommended and a goodly number of our profession feel that the use of iodine is good treatment for some or all forms of goitre. Except as a pre-operative measure, I do not think iodine should ever be given a thyroid case which shows any symptoms of hyperthyroidism. There are but two type of goitre which can be safely treated medically by iodine, and I here refer to the colloid enlargements of adolescence and of pregnancy. This statement might be put differently; I am fairly well convinced that all goitres are surgical problems except the colloid goitres of adolescence and pregnancy. I recently heard an excellent internist forcibly express my sentiments by saying that no goitre cases over

eighteen years of age should be given iodine except as a pre-operative measure.

The difficulty in the iodine problems lies in the fact that men who believe in this treatment are uncertain as to the varieties of goitre in which it is helpful. The next most natural mistake, therefore, is to give iodine to all goitres, and some practitioners follow the practice of continuing the drug for indefinite periods. I have studied very carefully the results of iodine in my thyroid surgery during the past four years and believe, in the light of our present knowledge, that it should only be used in toxic goitres as a pre-operative measure, and then only after admission to the hospital where the patient's daily condition can be checked and frequent metabolism readings taken. When iodine is given indiscriminately and for indefinite periods, then its value as a pre-operative measure is lost to both the patient and surgeon and often the possible successful surgical issue is materially minimized.

While we can often predict good effects from iodine in certain surgical cases, yet in most of our surgical problems we cannot foretell its efficacy until a trial has been given the drug. Furthermore, it is almost a certainty in our experience that those cases who are not benefited by iodine are usually made worse. This especially is true of the nodular goitres and the hyperplastic types that have small adenomas hidden in their substances. These facts emphasize the importance of hospitalization of all hyperthyroid cases before we resort to iodine for a trial.

The value of iodine as a preventive measure has been well established and every practitioner should be familiar with the necessity of this therapy in children after eleven years of age if there is a deficiency in water or food. However, in this representative gathering I cannot refrain from referring to the ill-advised activities of some public health agencies in their effort to administer iodine indiscriminately to all persons in drinking water and table salt. I believe public health work should be purely educational and intelligent treatment should be left to the family physician. In this one locality I am sure the number of toxic goitres has increased in the past five years and, to my knowledge, some of these have been simple goitres which have suddenly taken on active growth and become acutely toxic through the ill-advised use of iodized salt. I feel that the advertised product of iodized salt is a very harmful agent in our goitre problem and that its sale should be prohibited by the proper authorities.

Again, referring to iodine as a pre-operative measure. I would like to bring out the point that many surgeons believe that good effects can only be produced but one time, and then operation should immediately follow. Some feel that this good effect may be repeated, but the majority concur in the opinion that, if good effects are to be obtained a second time, there must be an intervening period of from three to six months. Finally, after operation for all types of goitre, we are finding iodine of value, and for the past three years have been using it routinely in our convalescent cases.

Dr. Willard Bartlett first called this to my attention and theoretically the drug is given for the same reasons that we give it to children from eleven to sixteen years of age.

The effect is often very gratifying in the extremely toxic condition so frequently seen within the first two or three days following operation. It is a common experience for us to see great post-operative restlessness, high fever, prostration and fast heart action rapidly improve under proper iodine therapy. Until the patient can swallow, we give Lugol's solution by rectum and thereafter by mouth, keeping this up in small doses of three to five drops for six months after operation. By this means we hope to take all work off the residual thyroid tissue, which, in turn, will prevent compensatory hypertrophy with its possible return of symptoms. Since we have followed this method there has not occurred a single case of recurrence following operation and the return to health has apparently seemed more rapid and smooth.

Treatment

The toxemia and systemic effects of hyperthyroidism are due to excessive thyroid hormone with its incomplete molecule of iodine. Briefly, the victim is taking thyroid extract and iodine in quantities sufficient to produce hyperthyroidism.

Does it seem logical to treat this nervous wreck, this overworked and weakened myocardium by bromides, rest cure, diet, digitalis and other medical measures, yet allow the exciting hormone to continue to pour into the victim's circulation from the thyroid laboratory? As Crile has said, would it not be better

to first stop the taking of the toxic drugs by surgical removal of the over-active gland tissue, and then supplement this by some or all of the valuable medical measures so necessary to restore the patient to strength and health? Statistics covering a large series of toxic goitres treated medically are not available but literature is full of the results of these cases surgically treated. My own results and those of many surgeons can, I think, be conservatively stated as follows: 70 per cent recover their strength in about three months, have the average capacity for work or mental activities, and life is really worth living. About 25 per cent are materially improved in every way, are capable of doing a moderate amount of work but always have to guard against over-exertion. The remaining 5 per cent are those who have suffered permanent and irreparable damage to both heart muscle and nervous mechanism, and these are definite invalids.

With these definite and established results, I think we may wisely conclude that none of the conservative measures directed to the relief of hyperthyroidism can in any way approach the efficacy and certainty of surgical treatment as the primary method of arresting the disease, providing the operation is followed by an efficient medical regime of rest and proper drug therapy. As Crile has said; "Surgical treatment, supplemented by a proper medical supervision, not ony conserves life and function but is of economic value also; namely, it is the shortest road to recovery."

Medical Arts Building.

THE CLINICAL SIGNIFICANCE OF HIGH TONE HEARING DEFECTS.*

By M. L. BREITSTEIN, M. D., Baltimore, Maryland.

The clinical purpose of a hearing test is to determine the amount of hearing loss and to localize the affection. Our prognosis will depend upon these two findings. If the hearing loss is not too great and the affection is localized in the conduction apparatus, the defect is regarded as an obstructive deafness, and we feel justified in giving a favorable prognosis. If, on the other hand, we find evidence of a nerve lesion, we feel warranted in assuming that the deafness will become progressive and we are accordingly pessimistic in our prognostication.

How do we make this very important differential diagnosis? We must necessarily rely largely upon the functional tests of hearing together with the history and the physical examination to thus differentiate obstructive from nervous deafness. It is at once apparent that a proper interpretation of these hearing tests is of the highest importance. The criteria upon which we base our diagnosis and which are regarded almost as otological axioms briefly stated are: (1) Nerve deafness is indicated whenever the higher tones of the musical scale are heard less than the lower tones and especially if the so-called upper tone limit is lowered. (2) Obstructive deafness is indicated whenever the high tones are well heard, but there is a loss of hearing for the lower tones with increasing difficulty as the scale descends; and especially if the so-called lower tone limit is raised. (3) Bone conduction of shortened duration is indicative of nerve deafness. However, if the hearing by air conduction is lowered and the bone conduction is normal or lengthened—actually or relatively—it is taken to denote obstructive deafness. The Weber, Rinné, Schwabach and Gellé tests all involve bone conduction. In this discussion we will consider only the air conduction hearing tests.

Graphically, that is, by audiogram, if the low notes are charted at the left and the high notes at the right, uncomplicated nerve deafness should show a curve sloping downward from left to right; uncomplicated obstructive deafness should show a curve sloping upwards from left to right. Combined nerve and obstructive deafness should show a curve with the right, the center, and the left approximately on a level, that is, sloping little, if any, up or down. These are the orthodox teachings to which otologists have held firmly.

In 1923, Goldstein[1] published an elaborate chart into which chronic catarrhal otitis media, chronic purulent otitis media, otosclerosis, otosclerosis with nerve deafness, peripheral nerve deafness, and central nerve deafness were differentiated and snugly fitted in accordance with the tuning fork hearing tests. This "Table of Functional Tests Corrected," as it was called by the author, followed very closely the well established teachings which have been summarized above. In 1925, Duell[2] made the following statement, "we also know that obstruction of the conducting apparatus does not lower the upper tone limit unless there is fixa-

*Presented before the Medical and Chirurgical Faculty of Maryland, Otolaryngological Section.

tion of the stapes in the oval window—when there will be a marked interference with the upper tones as well as with the lower tones."

These publications are fairly characteristic of the then existing attitude of otologists.

There was an enviable calmness in their ability to complacently correlate tuning fork tests and ear pathology. In more recent years, however, there have been evidences of doubt, and at present we approach the interpretation of hearing tests with some degree of uncertainity. In 1921, Emerson[3] made the statement that there is no hearing test which is characteristic for any particular form of middle ear disease. The same author in 1924 made other statements which were decidedly disturbing. He said, for instance, of all the forms of deafness, the so-called nerve deafness was the most amenable to treatment. He reported, furthermore, that lowered bone conduction may exist for years and after treatment, in some cases, be partially restored. It was observed that the conducting apparatus may be impaired by the loss of the drum membrane, malleus and incus with epidermization of the promontory—and yet the hearing may be but little impaired.

Dean and Bunch[4] made a very exhaustive and careful study of the tonal ranges in lesions of the middle ear. They found in an analysis of the clinical charts of 22 cases of acute otitis media—that in every case except one there was either decreased bone conduction, lowering of the upper tone limit by bone conduction (i. e , by 20,000 or more) or a defect in the curve which was suggestive of a lesion of the nerve or end organ. These signs of nerve or end organ involvement appeared very early in the disease. It is their opinion that the lesion of the nerve is not necessarily dependent upon the condition of the middle ear. They found no definite relation between the severity of the middle ear infection and the nerve lesion; for when the middle ear infection was unilateral usually the unaffected ear also presented evidence of nerve involvement. In every case of chronic otorrhea except one there was evidence of a nerve lesion; and contrary to the acute infections, there was an interdependence of the middle ear lesion and that of the nerve. Dean and Bunch regard the following as suggestive of a lesion of the acoustic nerve: Audition for the higher notes is poorer than that for the lower or middle part of the tonal range. If the lower notes of the tonal range up to about 3,000 D. V. are heard normally, and there is a diminution in the audition for the notes in the upper part of the range, this high tone defect is suggestive of a nerve lesion. If, however, there is a uniform diminution in audition for tones throughout the range, this diminution of audition for the higher notes does not indicate a lesion of the nerve or end organ. There would have to be a distinctly greater diminution for the notes in the upper part of the scale as compared with the tone best heard in the lower or middle part to indicate positively a nerve lesion.

There is a very significant paragraph in this article by Dean and Bunch to the effect that frequently the cases of hyperplastic otitis media report improvement in hearing following one kind of treatment or another. *Hearing tests failed to show actual improvement in any case unless the lesion of the nerve or end organ greatly overshadowed the middle ear lesion; the improvement resulted from the treatment of the case either for syphilis, or removal of foci of infection.* (They mention tonsils specifically.)

This would seem to agree with Emerson's claim that so-called nerve deafness is the most amenable to treatment. Also there is an alignment with Emerson by Dean and Bunch and by Duell in their emphasis of the importance of foci of infection. Emerson is the outstanding advocate of the relation of foci of infection to deafness. He believes that chronic deafness is not a steady loss of tone perception, but follows acute exacerbations of a local focus. The deafness is stationary until the next toxic invasion with evidence of the local process always present until extreme old age.

More recently Fowler[5] has reported some experiments which are of great interest. According to Fowler, acoustically there are three factors which control the progress of sound waves through a conducting or transmitting system, such as that of the ear: (1) inertia (weight) which impedes acceleration or change in direction or velocity; (2) elasticity, which impedes displacement; (3) friction which impedes motion or velocity. These three mechanical properties act singly or together in various ways.

If it be assumed that the vibrations of the different parts of the conducting mechanisms take place as usually described in the text books, then it is comparatively simple to pre-

dict the effect upon an audiogram of any simple type of conductive lesion; for example, the weighting of any or all of the parts which would decrease particularly the high frequencies. Obstructive lesions are those which in any way interfere with the normal sound transmission through the middle ear; anything, in other words, which impedes or otherwise modifies this.

Fowler attached a flattened shot weighing 85 mmgm, to the drum over the umbo, and then audiograms were made first of the hearing with the drum mebrane of the ear horizontal and second with the drum in the normal vertical position. An audiogram was also made of the ear without the shot attached to the umbo. Contrary to the expected result the lower tones were little if any affected, while the higher tones were perceptibly lowered. In another experiment, an 85 mmgm. round shot was accidentally attached slightly excentric to the umbo of a normal ear. Audiograms in the horizontal and vertical positions in this case gave most unexpected results. There was a raising of the high frequencies and a lowering of the low frequencies.

These two experiments demonstrate how a small mass in a slightly different location may have a definitely reversed effect upon the same frequencies. They prove that though it be clearly an obstructive lesion, such a lesion may either lower or elevate the low tones and that it may also lower or elevate the high tones. Since the placing of a shot upon the umbo may produce such divergent results, the conclusion is unavoidable that even this artifical "lesion" has changed the mode of motion of the parts of the conducting mechanism so that it differs from the normal. ANY REAL LESION TENDS TO DO THIS AND EARS VARY GREATLY; CONSEQUENTLY, THE SAME CONDUCTIVE LESION IN DIFFERENT EARS MAY CAUSE EXACTLY OPPOSITE EFFECTS UPON THE AUDIOGRAM. It is interesting to note further that in spite of the rather large conductive lesion in these experiments (the shot weighed from 3 or 4 times as much as the malleus), the variations from the normal ear were so very slight that they do not give conclusive data for the differential diagnosis of conductive lesions, at least those confined to the drum membrane or ossicles. In all these experiments the tones above 4,000 were better heard when the pressure of the shot was increased. This is a decided shock to our belief in the theory of obstructive deafness. It would seem from these experiments that, even with simple lesions, the interpretation of changes in audiograms is quite difficult. Moreover, it is shown quite clearly that just because there is some so-called obstructive lesion in the conductive mechanism, it does not necessarily follow that there must be present a lowering of the lower notes out of proportion to the high, or that because there is a lowering of the high tones more than the lower, that this may not be due to the so-called obstructive lesion and not necessarily to a nerve deafness alone.

Clinical observation would seem to support the deductions from these experiments, and I should like to report four cases in confirmation. In all of these cases there was very definite middle ear pathology. Hearing tests were done with a 2A Western Electric Audiometer and the hearing tests showed defects in the high tones as well as in the low tones. Eustachian catheterization was the treatment employed, and the particular point of interest is that in all these cases the improvement, when it occurred, was more marked for the high tones.

Case Reports.

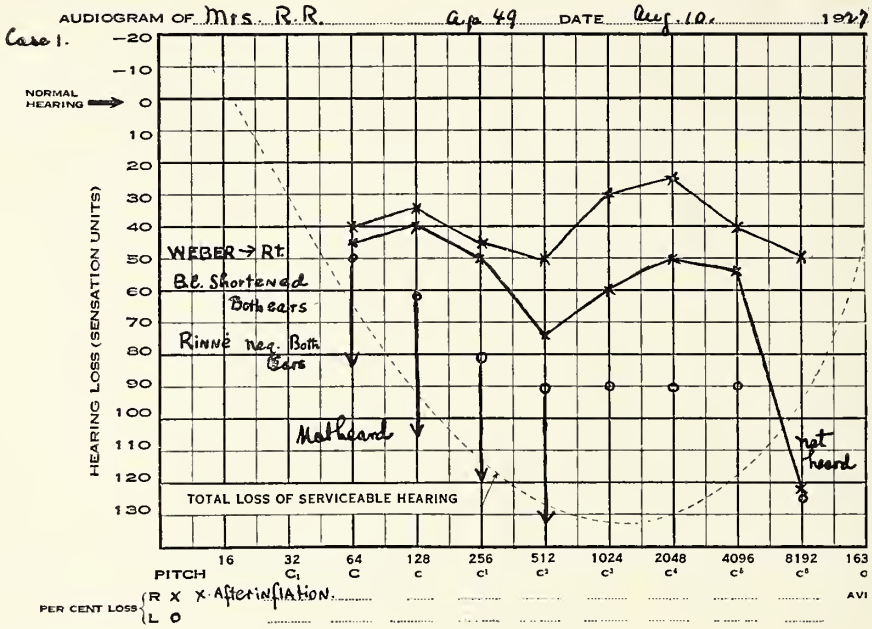
Case No. 1, Mrs. R. R. Age 49.

Patient was first seen on August 10, 1927. She complained of tinnitus and deafness in both ears. The deafness in the left ear came on twenty-five years ago, immediately after typhoid fever. The deafness in the right ear is of thirteen years' duration. The ears have never discharged. The family history is negative for deafness. There have been occasional attacks of vertigo. Recently she has noticed the high tone tinnitus, particularly marked for the right ear.

Examination:—The nose and throat examination revealed a chronic tonsillitis. Both drums are thickened and retracted. The vestibular tests were normal. For the hearing test see the audiogram. It will be noted that in the left ear, none of the notes from 64 to 512, inclusive, are heard. 1024, 2048, 4096 are heard at 90. 8192 was not heard. The hearing in the right ear was somewhat better. It will be noted that 8192 was not heard on the first examination. Weber was referred to the right. Bone conduction was shortened in both ears. Rinné was negative for both ears. After eustachian catheterization, the audiogram

showed the greatest improvement in the right ear from 512 through 8192; whereas, 8192 could not be heard before treatment, it was heard after catheterization.

the left ear was first noticed eight months ago after a "cold." Tinnitus was very marked immediately after the onset. The tinnitus has improved but the hearing has become steadily

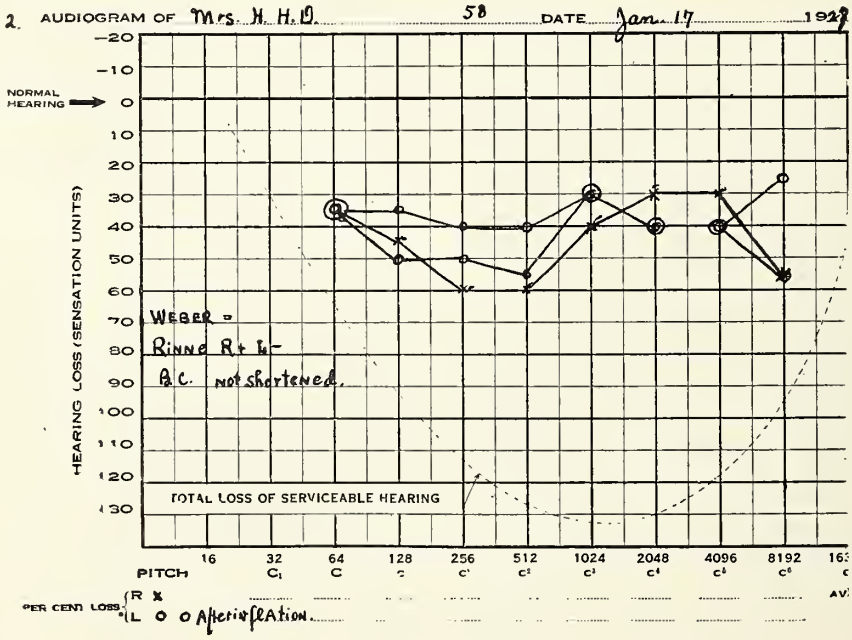


Case No. 2. Mrs. H. H. D. Age 58.

Patient was first seen on December 10, 1926. The main complaint was deafness. She had had difficulty in hearing in the right ear as long as she can remember. The deafness in

worse. There is no history of deafness in the family. The ears have never discharged.

Examination:—The nose and throat examination was essentially negative. Both drums were found to be thickened and retracted. The



Weber was not lateralized. The Rinné was positive in the right ear; negative in the left. Bone conduction was not shortened. The audiogram before treatment showed the hearing for the right and the left ears to be approximately the same. Both ears received the same treatment and yet on examination after treatment there was an improvement in the left ear with no improvement in the right. It will be noted that, whereas 8192 was heard at 55 before the treatment, it was heard at 25 after treatment.

Case No. 3. Mr. E. A. Age 28.

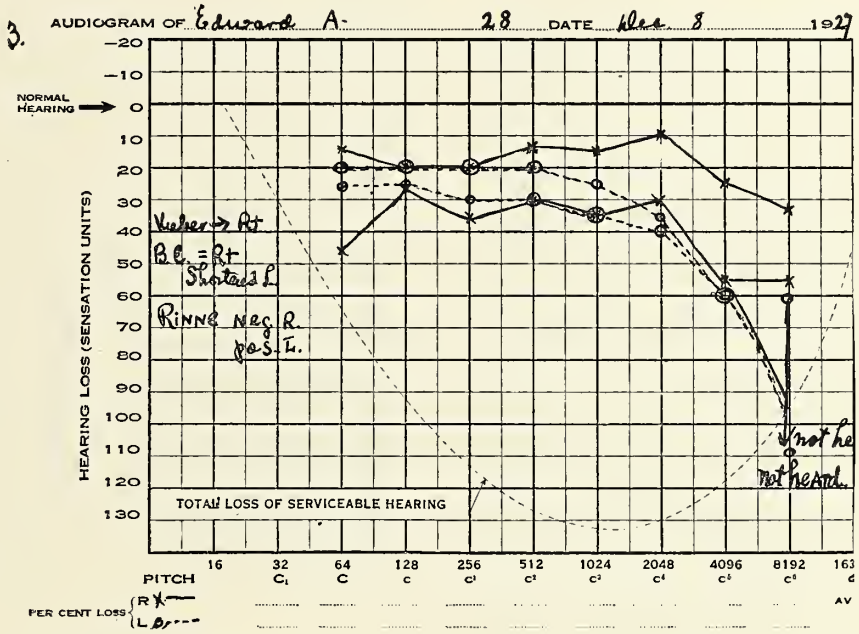
Patient was first seen on December 17, 1927. He complained of deafness in both ears, particularly in the right. The deafness is of about fifteen or sixteen years' duration. There is no history of discharge. There is no history of deafness in the family.

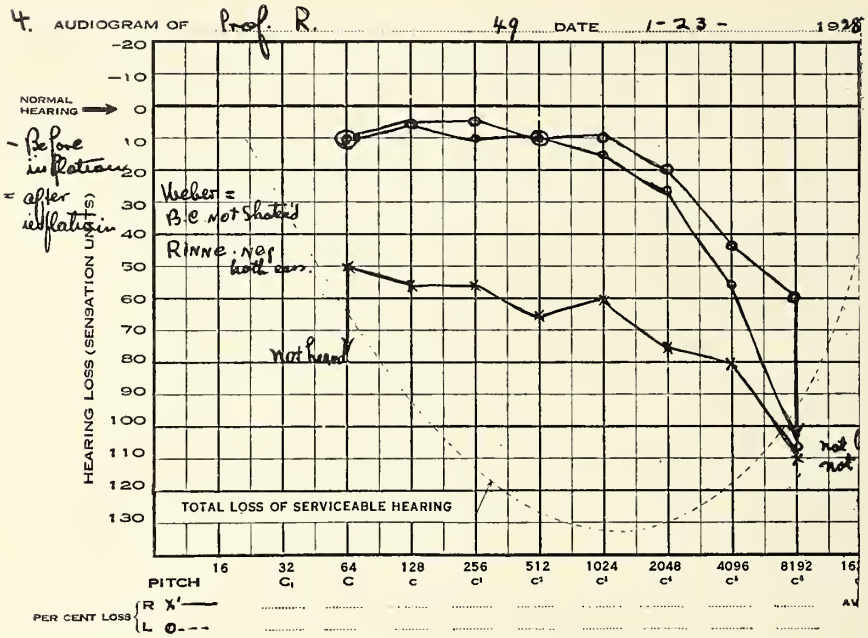
Examination:—The nose and throat examination revealed a chronic tonsillitis. Both drums presented a very unusual appearance. They were hemorrhagic and full. There were bleb-like formations on both drums. A paracentesis was done and a small amount of blood was obtained from both ears. After this the eustachian tubes were catheterized. Before treatment the Weber was referred to the right. Bone conduction was equal in the right; shortened in the left. Rinné was negative in the right; positive in the left. It will be observed from the audiogram that the right and left ears are very close together, except that 8192 was heard in the right ear at 55; whereas, it was not heard at all in the left ear. After treatment it will be noted that the improvement was decidedly more marked for the right ear and that the greater improvement occurred from 512 through 8192.

Case No. 4. Professor R. Age 49.

Patient was first seen on June 21, 1927. He complained of difficulty in hearing. The right ear had discharged since childhood. At seventeen years of age, polyps were removed from the right ear. The discharge continued up until about 5 years ago, since which time there has been no further discharge. The patient says that the left ear has never discharged. The deafness is worse in the right ear. The hearing in the left ear is variable. At times he can hardly hear at all and then suddenly the hearing will clear up.

Examination:—The ear examination showed great destruction of the right drum except for a small portion in the superior posterior quadrant. There was no discharge. The middle ear was well epidermized. The left drum was intact. However, in the inferior, posterior quadrant there was a depression which looked very much like a healed perforation. The membrane over this depression was so very flaccid that it could be seen to move with res-





piration. An audiogram was made of the left ear before and then immediately after eustachian catheterization. The patient gave unusually intelligent cooperation. It will be noted in the audiogram, that whereas 8192 was not heard on first examination, after inflation it could be heard. It will also be seen that the improvement in the hearing is particularly marked from 1024 through 8192.

BIBLIOGRAPHY.

1. Goldstein: *Laryngoscope*, Volume 33, page 657, September, 1923.
2. Duell: *Laryngoscope*, Volume 35, page 778, October, 1925.
3. Emerson: *Annals of Otolaryngology, Rhinology and Laryngology*, 1921, Volume XXX, page 994; 1924, Volume XXXIII, page 865; 1926, Volume XXXV, page 1098.
4. Dean and Bunch: *Annals of Otolaryngology, Rhinology and Laryngology*, June, 1922.
5. Fowler, E. P.: *Transactions of American Otological Society*, 1927, Volume XVII, part III, page 637.

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CHOLECYSTOGRAPHY:

A Valuable Diagnostic Method.*

By NOLAND M. CANTER, M. D., Harrisonburg, Va.

Sabatini, while studying the elimination of drugs through the liver, found that bromides are eliminated through the gall bladder and are found in the bile. Knowing that this element is opaque to the X-ray he saw the possibility of using it to make the gall bladder opaque, and this organ visible. He expressed the conviction that the gall bladder is made visible because it confines the bromide.

Early in 1924 Graham and Cole reported X-ray visualization of the liver and gall bladder by intravenous injections of tetrabromphenolphthalein, which is eliminated in the bile and renders the gall bladder opaque to the X-ray. This method greatly improved by the use of the sodium salt of tetraiodophenolphthalein has come to be universally used in the diagnosis of gall bladder disease. The technic lies in the injection of 4.5 Gms. of the drug in water in the early morning into the median basilic vein of the fasting patient. Radiograms are made at the fourth, seventh and tenth hour. The shadow of the gall bladder normally appears about the fourth hour, first appearing as a faint shadow, and gradually becoming more distinct, diminishing in size as it empties. Intravenous use of the dye is, however, handicapped by occasional severe reactions and the possibility of necrosis at the site of injection. The untoward symptoms are due to vasomotor depression and dilatation of the splanchnic vessels with congestion of

*Read at the meeting of the Medical Association of the Valley of Virginia, at Clifton Forge, in 1927.

the abdominal organs. Dizziness, nausea, vomiting, abdominal cramp and backache may ensue.

Recognition of biliary tract diseases has been greatly advanced by the direct examination of the bile, and by X-ray of the gall bladder area by means of this new method, called

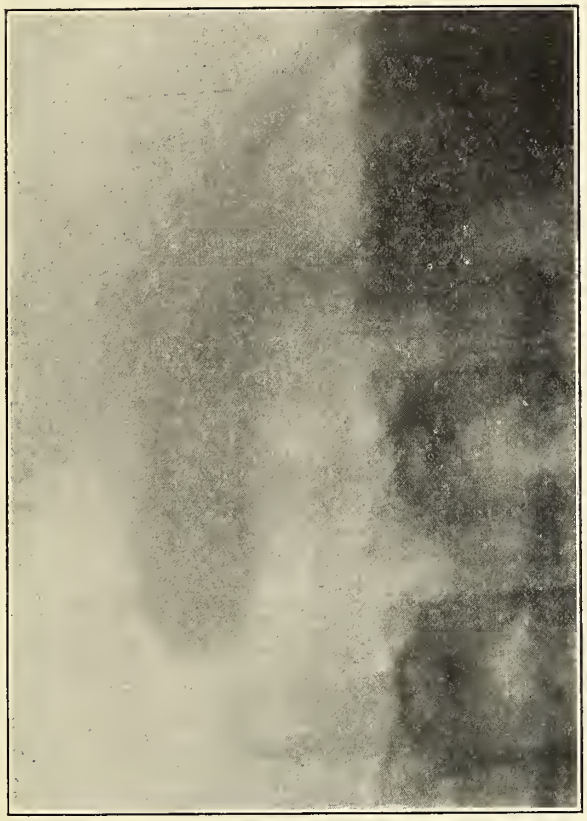


Fig. 1.—Normal gall bladder. Note position, size, uniform outline, and homogeneous density.

cholecystography. Up to a short time ago the X-ray showed gall stones in only about twenty-five to thirty-five per cent of the cases, and gall bladder lesions by indirect evidence, such as concavity of the cap, or fixation of the latter to the under-surface of the liver by gallbladder adhesions. In another group of cases the shadow of the gall bladder could be seen and was then usually considered pathological. In as much as seeing an object is its greatest asset for becoming well acquainted with it, it must be considered of greatest importance to possess a method of actually visualizing the gall bladder.

Graham and his co-workers give the following summary of their work:

1. Cholecystography has been shown to be possible by a variety of substances.

2. The criteria that distinguishes the abnormal from the normal biliary tract have been established.

3. With the aid of this method we have been able to make a correct diagnosis in ninety-five per cent of the cases of cholecystitis with or without stones, which it has been possible to verify by operation and pathological examination of the gall bladder.

4. This method has proved to be accurate even in cases of early cholecystitis.

Use is also made of cholecystography in combination with barium in the X-ray exami-

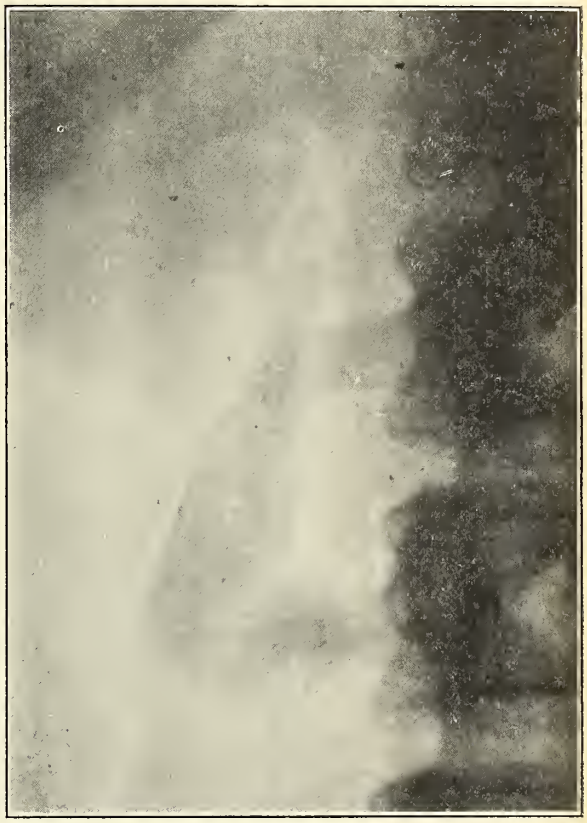


Fig. 2.—Note density in lower portion of gall bladder due to dense inflammatory adhesions. A stone lies in sacculated, lower, inner portion. Proved at operation.

nation of the stomach and duodenum in order to show the relations of the gall bladder to the latter organs. This method is of great importance in the differential diagnosis between cholecystitis and pyloric or duodenal ulceration. In about ninety per cent of the cases the shadow of the gall bladder is distinct, and permits one to say whether there is any pathological condition of this organ with regard to form, size, location and function. In about ten per cent of the cases no distinct

shadow is seen indicating obstruction of the cystic duct, or thickened wall gall bladder.

For general use I prefer the oral to the intravenous method of giving the dye. The oral method is direct, the dye being absorbed by the portal circulation and carried immediately to the liver where it is excreted. The systemic circulation is protected from any great concentration of the dye.

The oral method has the following advantages:

1. It gives the patient less discomfort and there is practically no reaction and no danger of sloughing. When vomiting occurs with the oral method it is probably due to gastric irritation by the drug on account of imperfections in the coating of the capsules, thus allowing the dye to be set free in the stomach. The vomiting which accompanies the intravenous method is due to toxicity. The present preparation of tetrabromphenolphthalein in specially treated capsules prevents any unusual discomfort to the patient.

2. In general the effect to the patient is less noticeable with the oral method than with the intravenous administration. After the former the patient in most cases feels perfectly well.

3. The oral method is more convenient, and can be used in the office and is less time consuming.

4. It is a safer method as the dye does not reach as great a concentration in the systemic circulation if it reaches it at all.

5. We would suggest that patients suspected of having gall bladder disease first be given the drug by mouth. If there is a failure to make a satisfactory examination then one may resort to the intravenous method. The former, however, I believe, is better for general use.

The following is a summary of the technic used:

The patient is given about ten or twelve capsules, each containing five grains of the sodium salt of tetraiodophenolphthalein, and instructed to take half the number with a light supper the night previous to the day of examination period. After supper the patient is to lie on the right side and take one capsule every fifteen minutes with a small quantity of water, until all the remaining ones are taken. Radiograms are made at the 12th, 15th and 18th hour. The shadow of the gall bladder is oval or pear shaped, and should be of uniform outline, is homogeneous in density, and varies in

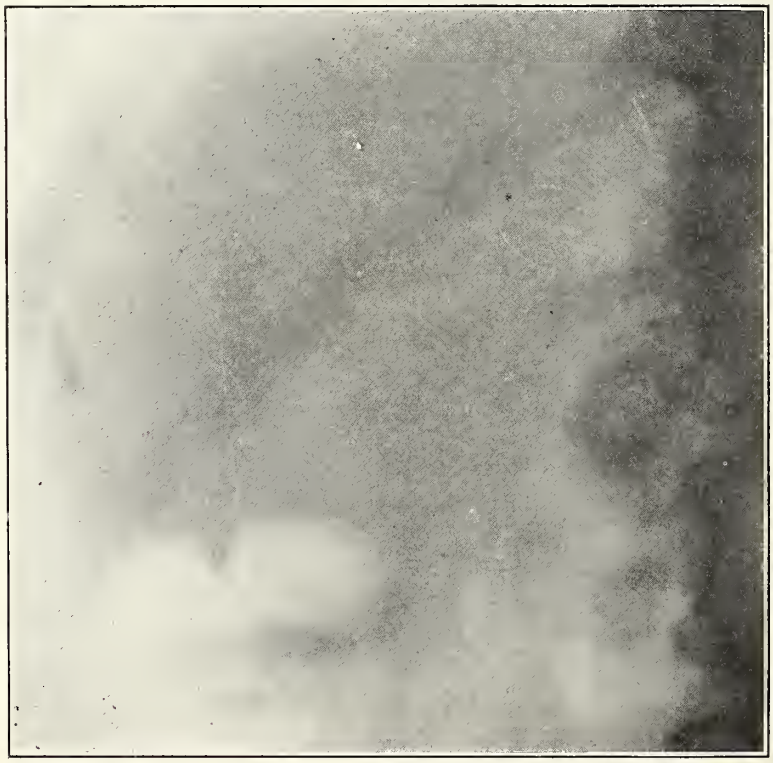


Fig. 3.—Shows a large dilated gall bladder, with a large stone lying outside in the duct. Note the layers of stone.

size with the filling and emptying of the dye. Abnormalities are shown by a faint or wholly absent shadow, by delay in filling or emptying, by deformities in contour, by unvarying size, and by mottling of the shadow. Failure of the dye to fill the gall bladder may be due to obstruction of the cystic or common duct by stones, adhesions, tumors, or by the presence of inspissated bile. Mottling of the shadow of the gall bladder may be caused by stones, papilloma, or pressure from the bile.

The diagnosis of the pathological condition of the gall bladder by means of this method has been found to be correct in more than ninety-five per cent of proved cases, while the clinical impression was correct in only sixty-five per cent.

The absence of the shadow is of chief importance. THE LESS YOU SEE, THE MORE IT MEANS IN RADIOGRAMS OF THE GALL BLADDER WITH THE DYE. This is the reverse of ordinary X-ray diagnosis. This is very hard to realize as one naturally feels there must be a fault in technic when the gall bladder shadow is absent.

Gall stones which are not seen in a plain film will be shown very distinctly by this test. There may be an imbibition of the upper layers of the calculi with the salt thus making the stone visible, or one may find the negative shadows cast by soft gall stones when in contact with the opaque bile; the latter type of stone showing as a negative show in the radiogram.

Stewart, of New York, has called attention to the following two findings:

1. Where there is no concentration of the dye in the gall bladder during the examination it indicates mucosal changes of cholecystitis.

2. Persistence of the shadow or failure of the normal diminution of the shadow following the administration of a meal is indicative of pathology.

In a brilliant lecture on the "Relationship of Radiology and Surgery," Sir Berkeley Moynihan made the following statement: "In connection with gastric disease it is hardly too much to say that we owe almost everything to the radiologist. As we look back upon the his-

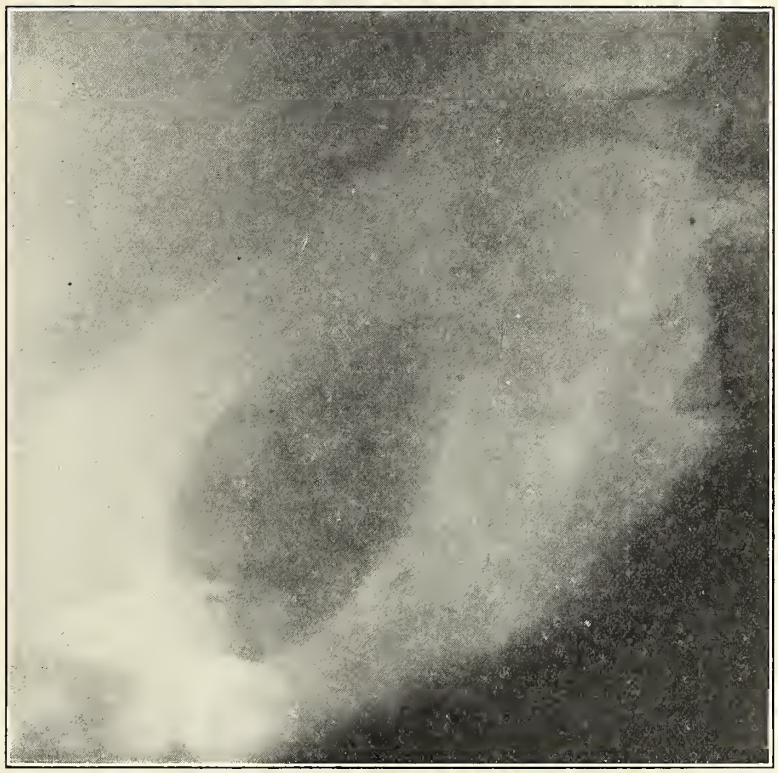


Fig. 4.—Multiple gall stones revealed as areas of lesser density in the denser gall bladder shadow.

tory of gastric ulcer in respect to its symptoms, diagnosis and treatment, we must now realize that before the radiologist came to the rescue there was little that could meet with our confident acceptance. I do not doubt that more errors have been made in the diagnosis of gastric ulcer than any other disorder. Its symptoms are mimicked so accurately by other diseases that even the wisest are deceived."

The radiologist has put all of this right or nearly right. The accuracy of the radiologist in the diagnosis of gastric ulcer nearly approaches that of the surgeon who inspects and handles the stomach. The occasions of error in diagnosis are so few that radiology remains supreme above all other methods in the accuracy of the diagnosis made with its help. If the diagnosis of gastric ulcer is made, by no matter whom, let us agree that it is not to be acted upon by the therapeutist, with drugs or weapons, unless the radiologist confirms it.

The method of cholecystography has placed gall bladder diagnosis on a par with the examination of the stomach and duodenum, and it is one of the most accurate methods of diagnosis that we have today.

REFERENCES.

1. Sabatini, G., and Milani, E.: Radiologic Visibility of the Gall Bladder After the Administration of Alkaline Bromides by Mouth. *La Presse Medicale*, 33, 1160-61, (Aug. 29, 1925).
2. Graham, Evarts A., Cole, Warren H., and Copher, Glover H.: Visualization of the Gall Bladder by the Sodium Salt of Tetrabromphenolphthalein. *J. A. M. A.*, May 31, 1924.
3. Stewart, Wm. H., and Ryan, Eric J.: Further Development in the Jejunal and Oral Administration of the Tetraiodophenolphthalein Sodium Salt. *Amer. Jour. Roentgenology & Radium Therapy.* December, 1926.
4. Copher, G. H., Kodama, Shuichi and Graham, E. A.: The Filling and Emptying of the Gall Bladder. *Jour. Experimental Medicine.* July 1, 1926.
5. Einhorn, Max, Stewart, W. H., and Ryan, E. H.: Experiences with Cholecystography. *Med. Jour. & Record.* July 15, 1925.
6. Levin, A. L.: The Clinical Value of Cholecystography in Gall Bladder Diseases. *Southern Med. Jour.* October, 1926.

LEWIS WEBB CHAMBERLAYNE (1798-1854).

By WYNDHAM B. BLANTON, M. D., Richmond, Va.

The qualities peculiar to the old Virginia gentlemen are well depicted in George W. Bagby's moving and impassioned essay on that subject. The reader of this eulogy is prepared to estimate the life of one of Richmond's most beloved physicians—Lewis Webb Chamberlayne. On Monday, January 30, 1854, two days after his death, appeared editorial enconiums in both the *Daily Dispatch* and *Richmond Whig.* The passing of an old Virginia gentleman was the testimony of both— the last of an old order, the light of other days, a man endowed with peculiar nobility and elevation of character.

One regrets that relatively little is known of the life of Chamberlayne. He made his impress, but he left no writings. Remembering what inspiration, in the preceding century, MacMichael got from the famous walking stick of five illustrious English doctors, we find ourselves wishing for another gold headed cane. However, he appears to have been a man of sterling worth, a man looked up to by his fellows as being made of finer clay and mourned at his death for the virtues exemplified. He possessed an impressive memory, and, thus armed, his natural conversational gifts were the more acclaimed. He was one of those frank and candid men whose sincerity brooked no dissimulation. Plain spoken, he was withal courtesy itself. He was firm and decided without a tinge of the dogmatic. Like so many others of his day and time, but altogether unlike his contemporary John Cullen, he was a "poor collector". A man of unbounded generosity, he gave liberally of his time and talent to the widow and the orphan, and thought little of the reward. He breathed and carried with him a wholesome moral atmosphere. In his presence one felt a challenge to a nobler self and the base and unclean scurried away on his approach. And though his tomb bears only the words "He rests from his labors", a more poetic hand might have chiselled:

"There is one crown I bear away with me,
And tonight, when I enter before God,
My salute shall sweep all the stars away
From the blue threshold: One thing without stain,
Unspotted from the world, in spite of doom
Mine own . . . . . .
My white plume."

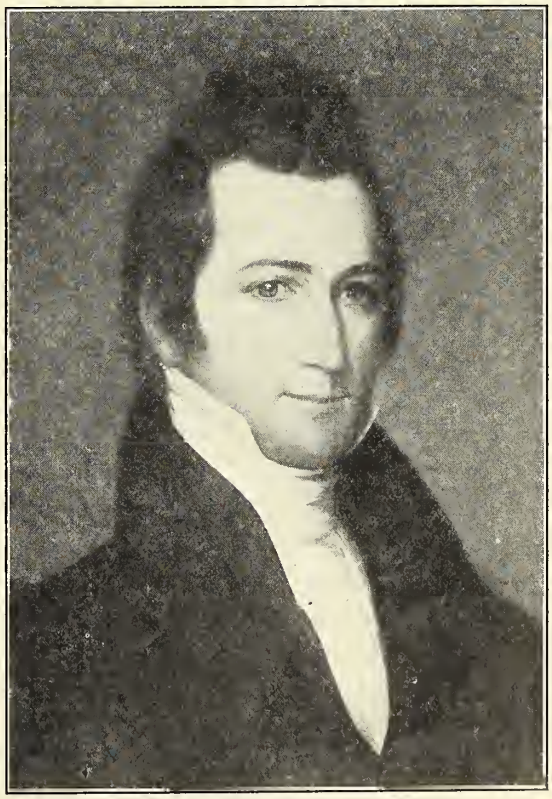
The subject of this sketch traces his ancestry to the Byrds of Westover—a stock that has more than once adorned Virginia history. His father was Edward Chamberlayne. His grandfather, William, had married Wilhemina, daughter of Colonel William Byrd. Lewis Webb Chamberlayne first saw the light of day at "Windsor Shades", King William County, Virginia. The year was 1798.

The years went by as they did for so many

other boys in the first decade of the 19th century. Nothing out of the ordinary, as far as we know, marked the childhood and adolescence of young Chamberlayne. Nothing out of the ordinary happened when, in due course of events, having decided on medicine, he, at the age of seventeen or eighteen, journeyed to Philadelphia and matriculated.

The University of Pennsylvania was the oldest medical school in America, founded in 1765 by John Morgan, who had been a pupil of Hunter in London and Cullen in Edinburgh. The traditions of the best of English medicine were kept alive by succeeding members of its faculty who continued to draw their inspiration from across the Atlantic. Southern students, particularly in the early days of the Republic, were attracted to Philadelphia. It is estimated that 4,000 studied medicine at the University of Pennsylvania alone between 1810 and 1843. It is not surprising, therefore, to find Chamberlayne graduating here in a class of eighty-seven in 1817. The school was housed in those days in the "Presidential Mansion", a house on Ninth Street, originally built for George Washington, since razed to give place to the present United States Post Office. Chamberlayne's teachers were distinguished men, many of whom are proudly remembered today by their alma mater. Nathan Chapman held the Chair of the Institutes and Practice of Medicine. Casper Wistar was Professor of Anatomy. John Syng Dorsey taught Materia Medica. Philip S. Physick still held the Department of Surgery. James, Coxe, Howson, Cooper, Caldwell and Barton were also his teachers. The Pennsylvania Hospital and the Almshouse furnished clinical material in those days, as now. The opening address of John Morgan, 1765, contained words which were prophetic of the continued service of this great institution: "By sending those abroad duly qualified, or by exciting emulation amongst men of parts and literature, it may give birth to other useful institutions of similar nature." It did, when this graduate of 1817 founded, with others, under the auspices of Hampden-Sidney College, the Medical College of Virginia.

Sydenham once said that two-thirds of medical practice was concerned with febrile diseases. Chamberlayne's graduating thesis was entitled "Intermittent Fever." The young doctor had launched into one of the most popular as well as vexed questions of his day,—fever, especially the more dramatic intermittent types, having attracted the best medical thought from time immemorial. Hippocrates, Galen, Paul of Aegina, Avicenna—all of the ancients—gave lengthy descriptions and crude classifications. Then the blight of the Middle Ages. After one thousand years of sleep, medicine reawoke with the rest of the intellectual world. The ferment of new ideas among other things brought better conceptions of febrile diseases. Thomas Sydenham (1624-89) made a classical contribution to the literature of these common disorders, incidentally describing and naming scarlatina. It was not till 1828 that light again dawned on this subject. In this year Louis' "Researches on Typhoid Affection or Fever" appeared, and the inspiration of the great teacher began to filter through to America. The contribution of early Americans to this subject is a thing we still point to with pride. Elisha North's treatise on "Spotted Fever," 1811, is a classic; no less Nathan Smith's essay on "Typhus Fever," 1824. Gerhardt and Stille each made a splendid contribution to American Medicine



Lewis Webb Chamberlayne, M. D. (1798-1854).

in 1836, in the differentiation of typhus and typhoid fevers. In 1842, Elisha Bartlett's work on fevers appeared and was the most notable of them all.

It is hard to realize that in spite of the clinical recognition of the different important febrile diseases a real understanding of them did not come until the last two decades of the 19th century, when bacteriological discoveries gave us a real and lasting etiological classification.

The intermittent fever of Chamberlayne's thesis has been recognized and described by Hippocrates. The ancients recognized quotidian, tertian and quartan varieties. Sydenham seems to have known very little more. By Bartlett's time (1842) these fevers were being related to localities, and marsh emanations, miasm, and malaria were terms in vogue to describe these mysterious causative influences. It was not until 1880 that A. Lavaran "pointed out the existence of a new parasite in the blood of patients suffering from palustral fever" (malaria).

In 1820, aged twenty-two, Chamberlayne married Martha Burwell Dabney. Thirteen children came of this union. One of them, Mrs. George W. Bagby, was especially distinguished for her humor and good sense. The Chamberlaynes lived first at 197 W. Main Street; later at "Montrose" in Henrico County, just adjoining "Brook Hill", then owned by his sister's husband, Mr. Williamson.

Richmond was a town of 20,000 inhabitants. Not an inconsiderable number of doctors were practicing here in 1845,—forty in all, exclusive of two botanic practitioners. Fifteen had offices on Main Street, nine on Marshall and seven on Franklin. A page from Ellyson's Business Directory and Almanac for this year is interesting:

Ellyson's Business Directory and Almanac*
For the Year 1846.

Practitioners of Medicine.

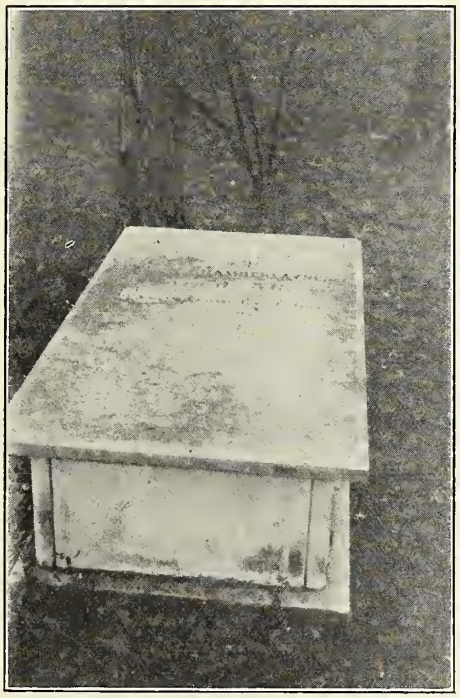
Beale, Jas., cor. W. Marshall and 6th, residence same place.
Bohannan, H. L., Mayo between Franklin and Broad, residence same place.
Bohannan, C. J. F., cor. Main and 15th.
Bolton, J. W., W. Grace between 4th and 5th, residence same place.
Brown, P. W., W. Franklin between 4th and 5th, residence same place.
Broocks, J. W., cor. New and W. Franklin.
Burton, M., basement Powhatan House, residence Powhatan House.
Cabell, R. H., W. Franklin between 13th and 14th, residence Grace between 5th and 6th.
Cabell, R. G , W. Franklin between 13th and 14th, residence Grace between 5th and 6th.
Cabell, J. Grattan, W. Franklin between 13th and 14th; residence Grace between 2nd and 3rd.
Carrington, Church Hill, cor. E. Grace and 24th; residence same place.
Carmichael and Mills, cor. W. Broad and 10th; Dr. Carmichael's residence, Virginia House.
Chamberlayne, L. W., 197 W. Main; residence same place.
Clark, and Son, M., cor. W. Franklin and 5th; residence same place.
Clay, E. G., 22 W. Main.
Cullen, John N., 13th bet. Franklin and Capitol; residence same place.
Cullen, P., 10 N. 13th.
Cunningham, John A., Main bet. 8th and 9th; residence same place.
Deane, Francis H., cor. W. Broad and 9th; residence same place.
Dove, John Franklin, bet. Birch Alley and 17th; residence E. Main bet. 19th and 20th.
Dove, James Franklin, bet. Birch Alley and 17th; residence E. Main bet. 19th and 20th.
Gwathmey, W. H., Birch Alley.
Haxall, R. H., cor. W. Main and 10th; residence same place.
Johnson, C. P., 150 W. Main.
Johnson, Thomas, 36 W. Main.
Mark, F., 189 W. Main; residence same place.
McCaw, J. D., Powhatan House.
Minor, G. G., 76 W. Main; residence Carlton House.
Myers, Henry, N. 13th bet. Capitol and Broad.
Nelson, Thos., cor. W. Main and 7th; residence same place.
Palmer, W. G., cor. S 13th and Main.
Patteson, W. A., 100 W. Main; residence same place.
Rawlings, George W., Broad bet. 9th and 10th.
Smith, D. D., E. Main bet. 19th and 20th.
Snead, Albert, cor. Broad and 5th; residence cor. Marshall and 5th.
Thomas, Creed, Broad bet. 7th and 8th.
Tompkins, J. H., 8 N. 13th; residence Bosher's Row.
Warner, Aug. L., Franklin bet. 7th and 8th; residence same place.
Watson, Geo., cor. Franklin and 6th; residence same place.
Wortham, A. G , 71 W. Main; residence cor. Marshall and 2nd.

W. W. Marshall, Botanic Practitioner, E. Main bet. 19th and 20th.
E. D. Bibinson, Botanic practitioner, Broad bet. Brook Ave. and Foushee.

Among the forty other physicians who were his competitors at this time in Richmond, Chamberlayne rose rapidly. In 1838, he joined Cullen, Warner, Bohannan and Johnson in the founding of the Medical College of Virginia. He assumed the chair of Materia Medica and Therapeutics and held it until his death. The first week of each college session was devoted by custom to certain popular lectures given by the faculty in rotation. The newspapers announced these in advance and commented editorially upon the lecture of the preceding day. Thus, amid a riot of adver-

*In possession of Mrs. Archer Jones.

tisements of private schools, lotteries, escaped slaves, foreign news, politics, imported stallions—black Arabians, Zinganee, Mingo, King David, Margrave—occurs this announcement in the *Daily Whig* of October 28, 1845, "The exercises of this Institution commenced yesterday with Dr. Chamberlayne's introductory lecture . . . . The medical faculty of the city and citizens generally are invited to attend." In a time when so much store was still put by platform teaching, the faint praise of a student of his in the class of 1840-41 should not be considered derogatory. Says this student, "the professor of Materia Medica was a pleasing lecturer, but a very close follower of the text-books." Perhaps the professor was one of those modest speakers who feel compelled to follow their notes and did not go off on oratorical tangents, a fault of the professional chair not confined to his day. That the professor could write—did write clearly and ably—was the testimony of his contemporaries. At intervals articles from his pen appeared in the lay press and were applauded for their force and vigor.



Tomb of Chamberlayne in Brook Hill Cemetary.

The teacher of therapeutics, if he appeared to follow the text-books of his day closely in lecture, was not as orthodox in practice, and the large following he had was evidence enough that he got results. In the first place, he was avowedly opposed to bleeding. How different from his friend, John Cullen, who implored someone to bleed him on his death bed! "Cholera" was a popular and blanket term for many of the intestinal disorders of the day. "It requires," wrote Rodly Dunglison in 1846, "the irritation be allayed by full doses of opium," and this in the same author's famous dictionary is given as five grains. Chamberlayne was one of those who opposed such practice. His cholera prescription was—

℞ Spirits of Lavendar
Spirits of Camphor
Jamaica Ginger — aa
Sig. ʒi in aq. as needed.

"Grandfather's mixture" is still cherished by his descendants, and failure to cure has never been known—when taken for the proper ailment.

In 1854 he was very sick—so sick that the report got abroad that he could not live. This set the college authorities to thinking about his successor in the chair of therapeutics. For the first time the subject was broached whether the choice of a new professor was the prerogative of the Board of Hampden-Sidney College or whether that authority was vested in the medical faculty. This same question, put off for the present by the recovery of Chamberlayne, was the unhappy shoal which ship-wrecked the union of the two institutions two years later.

Chamberlayne was just 56 years old. Something happened which brought him with swift steps to the gates of death. Just before daybreak Saturday, January 28, 1854, at Montrose, Richmond's beloved physician died. Among the virtues which marked him there were none greater than that he was a generous, high-minded, and unselfish gentleman, and a physician whose heart was touched by nothing so much as the feeling of our infirmities.

"S. O. S. BELLYACHE."*

By J. E. RAWLS, A. B., M. D., F. A. C. S., Suffolk, Va.
Surgeon-in-Chief, Lakeview Hospital.

Pain is as old as the human race. No individual has been free of it at all times. It has been termed the red light signal of danger. It has been considered Nature's call for help in time of trouble and distress.

In fact, without pain the ravages of death

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Norfolk, Va., December 6-8, 1927.

would be unrecognized and the victims would pass out without knowledge of the cause and thus without therapeutic help. So it would be well to consider pain as a blessing in disguise.

All subjective symptoms are pain or modifications of pain. In other words, pain or modification of pain is common to all diseases that give subjective symptoms.

Example: A patient has typical pain as kidney colic, and we call it pain. He has a burning or full sensation in epigastric region, and we call this pain, but modified pain. The difference in the first instance and that of the second is in cause, location and degree. Thus, pain or modified pain is common to and stands prominently in all diseases of which you are able to secure a subjective history. Since this is true, we would say that a disease should be greatly recognized or diagnosed as such by, first, its pain or modification, and, second, the grouping of other clinical data around this, such as can be derived from clinical history and confirmed by physical examination, observation and intuition.

In studying abdominal pain, we find quite a variety of causes. Abdominal pain can be divided into three classes:

1. Pain of organic origin.
2. Pain of reflex origin.
3. Pain of functional origin.

We wish to speak of a few pains of organic origin which we consider emergency calls for help, and which, for emphasis, we have termed "S. O. S. Bellyache."

The great majority of abdominal pains can be well-termed dry-dock pains—pains that are not an emergency, are not calling for immediate help, but are signaling danger to be cared for in the near future. Examples are pain of hepatic colic, pains of gastric and duodenal ulcers. Some of those of the emergency or "S. O. S." group we wish to emphasize, such as:

1. Acute complete intestinal obstruction.
2. Acute traumatic gastro-intestinal perforation.
3. Acute perforated gastric ulcer.
4. Acute perforated duodenal ulcer.
5. Acute appendicitis.

Let us consider the respective characteristic pain as a basis or unit for recognizing or diagnosing the foregoing acute emergency "S. O. S." abdominal conditions.

Acute Intestinal Complete Obstruction: We look for pain, and we find it standing out prominently. This pain is, first, localized, and second, it is intermittent. This intermittence is very characteristic, corresponding to the intermittent intestinal peristalsis, resembling very much the labor pain. In acute intestinal indigestion, causing violent peristalsis, we have more or less varying position or location of the pain, while in acute obstruction it is localized. To this you have other symptoms, such as the characteristic vomit, and the like.

If the life-saving boat does not reach the sinking ship in the way of operation within twenty-four hours, 25 per cent go down; if not until the end of forty-eight hours, 50 per cent perish; if not until the end of seventy-two hours, 75 per cent die; if not until the end of ninety-six hours, all go down with a mortality of 100 per cent.

Early diagnosis with surgical intervention would save many of the 13,100 that die annually in the United States.

Acute Traumatic Gastro-Intestinal Perforation: Here we have severe acute abdominal pain. When you have this pain with a history of recent abdominal trauma, whether or not the abdominal wall has been perforated, you think of gastro-intestinal perforation,—especially so when you have given morphine, grs. ¼, ½ or ¾, and still the patient is not free of pain. The earlier the operation, the better the prognosis.

Acute Perforation of Gastric Ulcer: We would be directed to this organ by a history of pain or modification of pain, such as burning or distress, indicating an ulcer. What is there peculiar about this? The pain or distress, first, is epigastric; second, it comes on while the patient is taking food or immediately afterwards, and, third, it is relieved when the stomach is empty.

When you have a sudden pain with the foregoing history and you have given your patient from one-fourth to a grain of morphine in six to eight hours and he is not relieved, it is practically 100 per cent perforated gastric ulcer, and is an emergency.

Acute Perforated Duodenal Ulcer: To condemn this organ as the offending member, we would have to get a history of a peculiar pain or distress. What is there characteristic about this pain or distress? First, relation to the meal. It comes on when the stomach is

empty,—just before the next meal. Second, it is relieved by taking food or soda. Third, the location, as a rule, is one and a half to two inches above the umbilicus and one and a half inches to right of the median line. A history of the above would condemn the duodenum.

With this history of sudden severe epigastric pain which requires two or three ¼ grain doses of morphine within six or eight hours to relieve, you can stake your life on an acute perforated duodenal ulcer, and the necessity for emergency surgery.

Acute Appendicitis: What is there characteristic about the pain of acute appendicitis? The pain in 60 to 70 per cent of acute appendicitis cases begins in the epigastric region and in two or three hours spreads gradually over the entire abdomen, especially around the umbilicus. In six to eighteen hours after the onset, the pain or soreness localizes in the abdomen and usually in the lower right quadrant in the McBurney region. This is so characteristic that you do not have to see the patient to diagnose it. You can diagnose it over the radio or wireless. This was done last summer by the ship surgeon on our way to Europe. The patient was a captain on a ship 500 miles away, and there was no ship surgeon. A description of the typical pain was broadcasted and our surgeon picked it up and advised the best course of treatment under the circumstances. The pain of an acute appendix is an emergency; it is an "S. O. S." call, and reminds us that 18,487 die in the United States yearly.

The human family, yes, our family, is sailing over life's fateful and tempestuous sea, and may we, as physicians, teach the public, and be able ourselves to tune in and respond promptly and definitely to the "S. O. S. Belly-ache" when it calls, and thus save the hundreds that go down annually in our nation.

REPORT OF A CASE OF UNILATERAL DEAFNESS WITHOUT VESTIBULAR INVOLVEMENT CAUSED BY MUMPS.

By EMANUEL U. WALLERSTEIN, M. D., Richmond, Va.

V. C., white female, age eighteen years, was first seen on April 13, 1927, complaining of deafness of the left ear. She was referred for tonsillectomy by her family physician who thought that her ear condition might be benefited by this operation.

The patient was a well-developed young woman whose past history was essentially negative.

Six weeks ago she had mumps, both parotid glands being involved. Diagnosis of mumps is certain, as a sister had the disease at the same time.

The case was very mild and her family physician permitted her to return on the third day to her employment. On the fourth morning she noted an intense roaring in her ear, deafness, but no pain. There was no vertigo.

The essential points in examination were:

Ears: Drums normal in appearance. Tubes patent.

Nose: Negative. No evidence of sinus infection. Transillumination normal.

Throat: Tonsils hypertrophic. Functional tests of hearing showed normal function on the right. Left ear completely deaf.

Vestibular Tests: The semi-circular canals of both sides showed normal reactions to both the cold caloric and rotation tests.

Wassermann (blood): negative.

Diagnosis: Total deafness of the left ear due to mumps.

Vestibular function unimpaired.

The older concept of mumps as a disease confined to the parotid no longer holds. The modern view is that the disease is a systemic infection having a predilection for glandular tissue. Besides the parotid any or all of the following can be involved, viz., submaxillary, sublingual, testis, ovary, breast, thyroid, pancreas.

The ear complications can be divided into two categories:

1. *Specific.*—Confined to the inner ear.
2. *Non-Specific*, or Incidental.—Involving the outer ear or the middle ear.

Toynbee, in 1860, was the first to direct attention to the inner ear complications. Inner ear complications are observed in every age, and there is no difference in the sex incidence. The severity of the mumps has no effect on the degree of ear involvement. Thus, a mild mumps may produce a severe inner ear disturbance and *vice versa.* An unilateral parotid involvement can produce a bilateral ear complication and a bilateral parotitis can produce unilateral ear disturbance.

Three types of inner ear complication are described:

1. The primary gland affection is a paroti-

tis, followed by, immediately or within fifteen days, an inner complication.

2. The primary gland involvement is not a parotitis but that of the submaxillary, sublingual or testis. The inner ear complication follows within a few days. The type is rare.

3. The rarest type is an inner ear complication preceding the clinically manifest gland affection by several days.

Pathology.—It was originally thought that the infection spread directly from the parotid to the ear along the facial and trigeminal nerves or by way of the Glaserian or Santorini's fissure. This view is not tenable because, with a one-sided parotitis, the opposite ear can be affected. Whether it is a purely toxic or inflammatory change has not been proven, as pathological examinations are lacking. The possibilities are meningitis, neuritis, labyrinthitis, either single or combined.

Symptomatology.—The usual course is a sudden sticking pain in the ear combined with tinnitus. With the disappearance of tinnitus there is a return of some function or, more commonly, a complete deafness of the affected ear. In a bilateral involvement, one side usually follows the other, and the second ear so affected has a slightly better prognosis.

Frequently the vestibular apparatus is affected. In mild cases there is vertigo which quickly passes off. In severe cases there is intense vertigo, nausea and vomiting. Spontaneous nystagmus is present, usually to both sides, or toward the healthy side.

The vestibular function can be involved with the cochlear.

Therapy.—Although many remedies are suggested, none are of proven value. Inflation is to be avoided.

Prognosis.—There is no danger to life in uncomplicated ear involvement. However, if meningo-encephalitis develops, life is endangered. Complete deafness is the usual outcome of an affected ear. Mumps is a very rare cause of deafness. In vestibular involvement there is usually no return of function but compensatory changes take place.

References.

Handbuck der Hals-Nasen. Ohren-Heilkunde. Denker U. Kahler.

403 *Professional Building.*

MALARIA CONTROL FOR CITIES AND COUNTIES.*

By L. L. WILLIAMS, Jr., Surgeon, U. S. Public Health Service, Field Headquarters: Richmond, Va.

Much has been written on the subject of malaria control. Too much has been highly technical and much too much has been of a general nature. My object today is to present, as simply as possible, an outline of those specific measures which, if applied in this country, will control malaria.

There are but two certain measures of control, namely, adequate screening and the control of the production of the *Anopheles* mosquito. Much has been said of quinine prophylaxis, but at best such measure will only reduce a heavy death rate or severe morbidity. In our country this measure has such a limited application that it will not be considered here. The economic status of any area must determine the mode of attack. In the well-to-do communities, where people live close together, it is advisable to attack the mosquito and to include *all* mosquitoes, pestiferous as well as the malaria-carrying. If the population is well-to-do but small, as in many of our communities, then it is usually necessary to confine the attack to controlling the production of *Anopheles quadrimaculatus* only. Where the people are poor and the area is large, then wholesale screening is the only effective method remaining.

Screening is possible for all. In former times the average cost of screening a home has been as high as $40 or $50 per house, and some mosquitoes got in. Screens were used only on well-constructed homes. There is a large class of so-called tenant shack which has been termed "unscreenable." This term can no longer be truthfully used. Today there is no such thing as an unscreenable shack, for all may be screened within a reasonable cost. The poorest type may be mosquito proofed at a cost of not over $8 per home.

For many years the Public Health Service has carried on studies and has made observations on the effectiveness of various types of screening and of the screening of various types of homes. During the past three years an intensive study has been carried out, which has given us a simple method of "mosquito-proofing" even the poorest of tenant homes.

*Read before the Virginia Public Health Association, January, 1928.

Following Coogle's work in Mississippi, no one can say it can't be done.

Coogle lays down the simple procedure as follows:

(1) If the cracks in the walls be small, cover them with a few rolls of ordinary paper adhesive tape, such as is now in common use in nearly every store in place of string; (2) flatten tin cans and tack over the holes in the floor; (3) tack 16-mesh screen wire over the outside of each window from top to bottom; (4) hang cheap screen doors; (5) hang a small cage of naphthaline balls (moth balls) in the chimney about two feet from the top.

Surely there is nothing difficult in the above procedure and each step is perfectly obvious with the possible exception of "cheap doors." However, even this is a simple matter, for Dr. Coogle has devised an easily made, very cheap and very strong door. Every health department in mosquito countries should have a number of pamphlets describing the manufacture of this door. In brief, the method is dependent upon joining the corners with thin metal strips instead of mortise joints. In cutting the frame of the door, each corner is cut at an angle of forty-five degrees so that the door-frame fits together like a picture frame. These joints are held together by tacking across the corners, on either side, 6-inch triangles of 12-gauge galvanized iron. The metal triangles on the screen side are applied after the screen is tacked on. Two cross-pieces, approximately one-third the distance from the bottom, are set across the door and held in place by 3-inch metal strips in the same fashion as the corners. Strange as it may seem, a man weighing two hundred pounds may swing on the outer corner of this door and yet the door show no signs of giving. The screen door is hung on the outside of the house door-frame and one-inch strips are tacked to the door-frame over the top of the screen and along the side. A narrow piece of canvas is tacked at the bottom of the screen door.

Such a door will last for years and can be made by unskilled labor. As a matter of fact, in the malaria control work of the Mississippi Valley Flood Emergency, it was found that carpenters were entirely too slow and most rapid production was secured by using high school boys.

The screening method in malaria control is unspectacular but effective. One Virginia county put on a two weeks' screening campaign with remarkable results. People are but waiting to be urged. Almost any county health department can secure a revolving fund of a few hundred dollars with which to purchase a relatively small amount of screen wire, quickly train one or two laborers in the making of doors, and actually screen the homes in the malaria sections at cost—an average cost of $8 per tenant shack. This will last approximately four years. How could we secure control of malaria more cheaply than $2 per year per family?

Mosquito Control.

Mosquito control should be divided into two general types, namely, permanent control and seasonal control, and should be discussed under three general headings:

(1) Control of all mosquitoes.

(2) Control of all *Anopheles*.

(3) Control of *Anopheles quadrimaculatus* only.

It should be remembered that, in these parts, *Anopheles quadrimaculatus* breeds in absolutely still water only; all other *Anopheles* will breed in reasonably still, clean water, with some floatage; and that pest mosquitoes breed in containers, dirty water of all descriptions and salt water.

Drainage is the most effective method of controlling the production of mosquitoes. Remove the water, and you remove the mosquitoes. It is unnecessary to go into a detailed discussion of drainage at this time. It is best to drain all places *known* to produce mosquitoes, and then await the advent of the breeding season. Thereafter, whenever and wherever adult mosquitoes are found, an intensive study should be made of all waters nearby and those wherein mosquito larvae are found should be drained. In cities and towns it is necessary that an inspector search for container breeding close to homes. Rain barrels, buckets, water troughs, cisterns, etc., have the power of destroying the morale of an anti-mosquito campaign. Where all mosquitoes must go, then undrainable places must receive weekly doses of oil throughout the summer season.

In the second type of place, where *Anopheles* only are to be stopped, it becomes necessary to search out their exact breeding places. As these are found they are put under control. If drained, they are gone for all time; if to be

treated seasonally, economies may be practiced which are not allowable where *all* mosquitoes must go. In these places Paris green may be applied, as this dust is usually ingested by *Anopheles* only. Paris green is mixed with dust (road dust, etc.), one part Paris green to ninety-nine parts of diluent dust. The mixture is cast on the windward side of the breeding areas and the breeze does the work of spreading. One pound Paris green per acre of breeding area is enough. If the breeding areas be not over twenty acres within a total area of twenty-five square miles, then one inspector with one car can do all the dusting on one day of each week.

In the third and last type of place, namely, where control of production of *Anopheles qualrimaculatus* only is contemplated, the work is much simplified, at least in the State of Virginia. Here *quadrimaculatus* is the only vector of malaria, and breeds only in water with no apparent current.

If a town or small community is so fortunate (and many are) as to have small ponds as the only quiet water within a mile, then the problem is simple. Either drain the ponds or apply Paris green once a week. I would advise no other course; none other would be cheaper or more effective.

In closing, I will give a brief word of advice to health officers: Look for the measure of your work in the end results. If the campaign is for screening, then the effectiveness of the work is measured by the presence or absence of mosquitoes within the house. If the campaign is to control mosquito production, do not waste much time dipping for larvae. Look for adult mosquitoes, and dip only when adults are found.

The measures here described are simple, easy to learn, and are effective. Any sanitary officer is capable of carrying them out. Each of these procedures has been done at one time or another by a totally untrained inspector with not over two weeks of supervision. With control so easy, why should any county retain its malaria rate?

Miscellaneous

Nose and Throat Clinics Proposed for Rural Districts In Virginia.

The committee composed of Drs. H. S. Hedges, Clifton M. Miller and H. B. Stone, appointed by the Virginia Society of Otolaryngology and Ophthalmology, to study Nose and Throat Clinics in the rural sections of the State, offered the following resolutions to the Society on April 28, 1928. They were unanimously adopted:

To the Ophthalmological and Otolaryngological Society of Virginia:

Whereas the reports of the physical inspection of school children in Virginia show an outstanding need of correcting eye, ear, throat and nose defects, and whereas there are large areas in the State, especially in the mountainous sections where, because of poor transportation facilities or lack of money, these children are not able to get to the centers where specialists are available, to receive treatment which they need, we, your committee, appointed to work out a policy for handling such cases, make the following recommendations:

1. That the members of the society hold themselves in readiness to meet calls for clinical service in such areas;
2. That all clinics thus held shall be under the direction of an executive designated by the State Board of Health, whose special business it shall be to work up these clinics in cooperation with the local health workers and local physicians;
3. That these clinics shall not be held in counties where there are specialists or hospitals doing eye, ear, nose, and throat work;
4. That before putting on a clinic, the local medical society shall always be consulted;
5. That the State be districted according to the attached map and the society designate conveniently located operators for each district;
6. That the State Board of Health shall supply the necessary record forms for use in the clinics. It is suggested that the North Carolina card system would be valuable in recording the work of the clinics;
7. That no operator who cannot meet requirements for admission to membership in the State Ophthalmological and Otolaryngological Society shall be appointed for clinical work in the rural districts.

8. Conduct of Clinics:
   a. That after the clinic is over the operator shall remain over night or in a calling distance, or shall leave adequate medical assistance in case of need;
   b. The number of patients assigned to one operator shall be not more than twenty-five per day;
   c. An anesthetist, preferably a trained anesthetist, shall be employed and paid not less than $1.00 a patient;
   d. Prior to the operation all patients shall have a physical examination including urinalysis and a coagulation test;
   e. All patients operated on shall remain over night;
   f. No patients who are financially able to pay the regular fee charged in the locality shall be accepted in these clinics and these shall be selected with the help of local physicians;
   g. As far as practicable, a graded fee system shall be used from a maximum of $12.50 to whatever the patient can pay. A limited number of patients unable to pay at all may be accepted;
   h. Operator's fee shall be placed at not more than $100 per day;
   i. The age of the patient shall be limited from four years through the public school age.
9. That a standing committee from three to five members be appointed to act as consultants and advisory to the State Board of Health in this work.

The standing committee appointeed by the president is composed of Dr. Clarence Porter Jones, of Newport News; Dr. H. Grant Preston, of Harrisonburg, and Dr. Harry B. Stone, Roanoke, chairman.

Extension Work in Graduate Medical Education.

(Issued by the Council on Medical Education and Hospitals, Chicago.)

The increasing interest in extension courses for physicians unable to leave their field of practice has resulted in the development of several plans for making such courses available. Several of the plans have now been in operation long enough to make a comparative study practicable.

Every plan developed has its points of advantage. No one plan could be adapted to all the varying needs and conditions. For this reason, a plan found superior in one state might prove decidedly inferior in another, and in this comparative study a comparison of values is not attempted.

Every plan discussed below is primarily a way of making graduate medical training available to those physicians who would otherwise not receive it. A few can leave their work and go to the medical schools, but the majority cannot, and many others will not, do so. Extension work is an effort to reach this majority, thus raising the general level of proficiency throughout the entire medical profession. While the work is still new, the success achieved in several states indicates that it is already advancing beyond the experimental stage.

The North Carolina Plan

In 1916 the state board of health, the medical school and the extension division of the University of North Carolina, following plans first worked out by the Fourth District Medical Society, arranged two itineraries, each of which was to be covered by a clinician every week for twelve successive weeks. There were six centers in each itinerary; in each center a lecture was given and followed by a clinic. A group or class of physicians was organized in each center and a tuition fee sufficient to cover the salary and traveling expenses of the instructor was charged. Expenses of organization were borne by the university and the state board of health. All work with patients was done during the sessions, no cases being worked up in advance.

The World War interrupted this work, but it was resumed in 1922 and has been carried on every year since then with gratifying success. The following are a number of interesting facts regarding it:

(*a*) In operation 6 years—1916 and 1922 to 1926 inclusive.

(*b*) Courses conducted in forty-two centers located in practically all sections of the state.

(*c*) Total enrollment, 1,185. Actual number of physicians registered for at least one course, 852, or between 40 and 45 per cent of those in active practice in the state.

(*d*) Attendance varied from 76.2 to 90 per cent. No evidence of loss of interest due to repetitions of courses, though several were offered four times.

(*e*) Subjects were restricted to pediatrics, pathology and general medicine. The twelve-weeks' course was last year divided into three series of four lectures each, given by three different instructors. Next year there will be two series.

(*f*) The courses were given in the summer, and instructors were brought from outside the state.

(*g*) Towns of from 1,500 to 50,000 population were chosen as centers. Only those centers guaranteeing an enrollment of at least fifteen were chosen. A personal office-to-office canvass was made in securing enrollments. The tuition fee for each physician was $30.

(*h*) The length of the session was approximately two hours. After a one-hour lecture on the topic of the day, from one to ten patients were seen, without regard to their bearing on the day's topic; most of the patients seen presented some diagnostic or therapeutic problem, and this plan worked best, of all the plans tried. Failure to work up cases in advance often resulted in a waste of time, but it had some advantages. Open discussion prevailed and was participated in by practically all present.

Missouri adopted the North Carolina plan with some modification, and in 1919 and 1920 conducted courses in nine centers. In this work the state medical society co-operated with Washington University, St. Louis University and the University of Missouri. In seven of the centers the courses were successful; in the other two the coal shortage is said to have prevented the completion of the work.

West Virginia, following the same plan, conducted eight-weeks' courses in six centers during the summer of 1923, and in twelve centers in 1924. The subjects treated were pediatrics and internal medicine. Lack of funds has prevented a continuation of the work, but plans are now under way for its revival.

Oklahoma adopted this plan with modifications in the spring of 1926. The state board of health provided a trained nurse, who planned the clinics. The work was planned so that director and nurse would be busy throughout the entire year, and in spite of poor roads the work was everywhere successful. One twelve-weeks' course, six nine-weeks' courses, and one one-week intensive course were held. Each course or circuit reached six or seven centers, with one or two lectures and clinics at each weekly visit. The work has been done through the Extension Division of the University of Oklahoma, in co-operation with the School of Medicine, but the instructors have been brought from institutions outside the state, as was done in North Carolina. Pediatrics and general medicine have been the subjects treated during the past fifteen months. Courses in tuberculosis and obstetrics are now being planned.

The Wisconsin Plan

Work was begun in Wisconsin on the North Carolina plan in 1917, but was soon changed to the holding of lectures and clinics either singly or in series, at any point in which a group organized and asked for them. An appropriation from the state was obtained. Elaborate outlines of courses were prepared and made available to the officers of the county medical societies. Aid was given in organizing a group if desired, and the length of the course and personnel of the instructors were accommodated to the desires of the group. Clinics were to be arranged and cases worked up in advance by the group. If possible, all preliminary work was done by correspondence between the county society and the extension division of the university. During the last two years, "no one has been particularly responsible for the organization of this work, and it has come pretty largely to a standstill," but a new committee has recently been appointed, headed by the man who organized most of the courses in North Carolina, and the work is again being organized and started on a broad basis.

The program as now planned is fourfold, provision being made for: (1) medical literature and clinical case report service; (2) extramural lectures for medical society programs; (3) short courses at the university, covering a 3, 6 or 12-day period, and (4) six-lecture clinical group courses in all sections of the state. All this work will be well started by the spring of 1928.

Minnesota adopted, at a date unknown to us, a plan similar to that of Wisconsin, though differing in several details; an eight-weeks' course is offered to county societies. Each weekly session consists of a morning-and-afternoon or an afternoon-and-evening program under the direction of two members of the faculty of the University of Minnesota Medical School. The state medical society helps in the work of organization. If clinics are to be held, the local group or class prepares for them. There is no state appropriation. No charge is made for the instructors, but their expenses and a certain amount of overhead are paid by the group. A three-day intensive course is also put on at the university, and other lectures and clinics are provided in Minneapolis. The Minneapolis courses are arranged by the co-operating action of the university and two strong county societies. They fill one evening each week for from ten to seventeen weeks, and are well attended by physicians in or near the twin cities. The three-day intensive course at the university occupies the entire time from 8 A. M. to 10 P. M. and has been of great service to physicians throughout the entire state.

The Colorado Plan

In Colorado, extension courses have been organized by the state medical society. During 1924, about forty teachers were secured and grouped in ten divisions of four each, all groups representing, so far as possible, the same four specialties. The work was strictly voluntary, each teacher bearing his own expenses. A team of four visited a locality once each month for six months, but no team visited the same locality a second time. The plan was satisfactory, except in one particular: Many outlying districts where the work was most needed were not reached. This work was kept up only during the year 1924.

In addition to this, however, a "state clinic" has been held annually for several years at the University of Colorado, where four days of intensive work are done covering all phases of medical study. There are usually 300 or more in attendance. A third line of work is a "traveling clinic," also of four days' duration and given at irregular intervals, in which the extension division of the University of Colorado, the Medical School, the Colorado Agricultural College, the State Tuberculosis Association and the Child Welfare Bureau all participate. For these traveling clinics the team is made up of a pediatrician, a psychiatrist and an obstetrician, chosen either from the faculty of the school of medicine or from among the leading practitioners of the state. The expense is borne jointly by the participating organizations.

The Ohio Plan

A number of district societies in Ohio have for several years offered an intensive program in some convenient center. A week in the spring or autumn is chosen, and prominent physicians of this country and from abroad are invited to lecture or conduct clinics. Demonstrations, round table discussions and other group meetings are arranged. The attendance at these postgraduate study conferences is usually large, so that the expense can be prorated and distributed among those taking advantage of each series of lectures. In one district society, for example, where postgraduate lectures are held for an entire week each fall, the cost has been uniformly set at $10 per member. In other communities, the cost ranges from $10 to $25 for special series of similar lectures. The second councilor district in Ohio, for example, has held such annual postgraduate conferences successfully for the past ten successive years at Dayton, the largest city in the district. The plan's chief limitation is that it covers only a week each year and therefore needs to be supplemented by other forms of extension work. This is being done in Ohio by arranging clinic days in the larger hospitals of the state, and by offering lectures on topics of interest at intervals throughout the year. In this work, the state society, the medical schools, the hospitals, the county societies and the state board of health are all co-operating.

Michigan has for about ten years sent organized teams to county societies to give an afternoon and evening program, consisting of clinics and informal discussions. Councilor districts have also conducted conferences, thirty such being conducted in fourteen districts during 1926. The conference continues through one day, from 9 A. M. until evening. Postgraduate clinics have also been held at some of the leading hospitals of the state. At such a clinic held at the University of Michigan Hospital at Ann Arbor last November, 300 physicians were registered. The state society is now promoting the organization of an all-year post-

graduate school at the university, to which physicians "may come for a day, a week, a month or six months," and "pursue a definite line of study with broken attendance."

The Pennsylvania Plan

Extension work in Pennsylvania began in 1922, through the co-operative action of the medical society of the state, the various county societies and the Graduate School of Medicine of the University of Pennsylvania. A group of extension students is formed largely or wholly through the efforts of the state and county societies. The group effects its own organization, bears its own expenses, and may function indefinitely. Temporary subgroups are formed to provide material for clinical study.

A group representative is chosen to confer with the dean of the graduate school of the university regarding the subject-matter of courses. An assistant representative (usually an alert intern in the hospital where the courses are to be held) is chosen to work up cases. A stenographer-clerk is employed to report (multigraph) the work, thus forming a "book of the course" a copy of which is sent to the dean. The teachers are selected from the faculty of the medical school or from private practice. The teacher gives a day to the group, for which the group pays him his expenses and a small honorarium. The course reaches over a period of two years and comprises 150 hours of work. The dean checks up the work done, examines the students and awards a certificate.

This plan is definite and worthy, but has proved too expensive to operate widely with funds now available, and for this reason only a few counties have enjoyed its benefits thus far. As soon as the funds can be provided the scope of the work will be widened and the courses established on a highly organized and permanent basis.

A "Philadelphia non-group extension program" is also in operation. It comprises "150 periods per session, divided into six separate systematic courses." The work is conducted by highly trained men, but is planned on the order of seminars rather than lectures, and the personal and informal character is thus preserved. It is a co-operative work of the Philadelphia County Medical Society and the graduate medical school of the university. This Philadelphia program with but little modification is also being carried out in Northampton County.

The New York Plan

New York has done more than any other state in extension graduate medical education. Much of this work, especially the formulation of plans, has been carried on by strong county medical societies, ably assisted in some instances by medical schools and by the department of health. Having been first begun in or directed from the large cities, it is best understood by studying first the work in one or more of these cities.

The Brooklyn idea had its origin in 1922, the centenary year of the Medical Society of the County of Kings. That county society, in cooperation with the Long Island College Hospital, adopted a complicated program of extension courses at hospitals, intensive courses at the college and lectures in the auditorium of the county society building. The lectures were given in two courses of ten each, in the spring and fall. The time found most convenient was Friday, at 5 P. M., and at this hour an attendance of 400 or 500 physicians was usually secured.

The intensive courses represented from thirty to fifty hours of work for each course, from four to eight hours being done on one day of each week. A course was planned therefore to continue about six weeks and require a weekly session of a half or a full day. Attendance was limited to from four to eight students, and the work partook of the nature of a seminar.

The extension courses comprised from eight to twelve hours of work, one to three hours being spent at a hospital in the late afternoon of one day each week. Attendance was limited to ten students and the work was after the order of an informal lecture and clinic. Eighty per cent of all work done in Brooklyn has been of the extension course type.

This work, modified to suit local needs and preferences, has been taken up by other strong county societies. It has been carried on for some time by the Medical Society of the County of Erie, in co-operation with the Buffalo Academy of Medicine, the University of Buffalo School of Medicine, the Buffalo Department of Health and the various hospitals of Buffalo. The Medical Society of the County of Queens is utilizing the hospitals and other teaching facilities of New York City in a similar way.

Outside of these large medical centers, the medical society of the state of New York, through its committee on public health and medical education, has conducted one or more six-weeks' courses in nearly every county of the state. While "the work throughout the state has been largely modeled on the lessons and experiences of Kings County," all plans have been kept as flexible as efficient service would allow, and the state society's message to the county units and other groups has been: "Ask for anything you want, and we will arrange it for you." Provision has been made for single lectures or for courses of any length desired. The session, which is usually about two hours long, may be a lecture or lecture and clinic. Collateral reading is arranged and informal discussion invited.

In all of this work, the state society's aim has been, not the training of specialists, but the raising of local standards of general practice. A worthier aim is hardly conceivable, and the results obtained have been quite gratifying. While conditions in one state are never identical with those in another, the results in New York have convinced the committee in charge of it that such work may be carried on anywhere if hospitals and men willing and able to teach are available.

This discussion does not cover all that is being done in extension graduate medical education in the United States, but merely outlines plans followed by state medical societies and universities. There may be other plans in operation that have not been reported. If so, the Council on Medical Education and Hospitals of the American Medical Association would be glad to learn of them. Many district and county societies have doubtless found satisfactory solutions to some of their local problems in extension medical study. A detailed report of their experiences would be a valuable addition to the fund of information now available. The growth of interest in extension graduate medical education is manifest everywhere. To make the experience of one state or local society available to all is a service that cannot be measured. (*Amer. Med. Assn. Bull.*, June, 1927).

Patience is a virtue that very few possess;
It plays a most important part in nearly all success.
—*Selected.*

Report of the Committee on Radiological Frauds and Improper Practices.*

Some of the remarks made by counselors from various parts of the country seem to indicate that this specialty is threatened by dangers which are more or less peculiar to radiology. It seems that in different parts of the country fee-splitting, masquerading under various disguises, is becoming rather prevalent. If one were to attempt to find the source of these various tendencies and to classify them, one would give first place to the organizations, corporations, or companies selling stock to physicians and surgeons and encouraging these men to refer their cases to X-ray laboratories operated and owned by such corporations or companies, in the hope of receiving dividends upon their stock; and, of course, the more cases referred, the larger the dividends. The plan constitutes, stripped of its business terminology, nothing more nor less than an offer of a financial inducement to physicians to refer their cases to certain X-ray laboratories. Then we have another type of organization which is rather innocent on its face but which offers discounts to members of the organization. That is to say, if the member refers his cases to the laboratory in which he is financially interested, he may have charges for X-ray services made to himself, and then he may take a discount of 20 or 25 per cent or more and collect the full fee from the patient. As a matter of fact, there is no restriction whatever to the fees this man may charge; he may obtain his X-ray services on a small-fee basis, and then take his discount and charge his patient a large fee for the same service. This creates a rather dangerous situation. Some of these laboratories which operate as stock companies are operating without a roentgenologist in charge, the members themselves claiming they are quite competent to make their own interpretations, their own fluoroscopic observations, and to prescribe treatment. Some of them employ a physician as a figurehead, who is supposed to pass upon cases coming to the clinic, but he actually does not. The diagnosis is made by the technician and the physician's name is signed to the report.

Now, in order to bring this matter before the Society and try to get something concrete done

*Read at the Thirteenth Annual Meeting of the Radiological Society of North America, at New Orleans, Nov. 28 to Dec. 2, 1927.

we have prepared a set of resolutions, upon which we ask your approval. The question will arise, of course, in all of your minds, as to what good this may accomplish. It seems to your committee that, if it does nothing more, it will place us on record with a certain definition of commercial X-ray laboratories and unethical X-ray laboratories; it will define clearly what we regard as ethical practice and as unethical practice. With that backing, we can go before our own local medical societies to obtain their support in cleaning up this situation in various localities throughout the United States. Here are the resolutions which we have to present:

Whereas: Certain practices are becoming prevalent in various parts of the United States, which threaten the welfare of radiology, affecting the practice of this branch of medical science in a peculiar, deleterious, and harmful manner, and

Whereas: It is an important function of any medical organization to protect its specialty from the harmful effects of improper, unethical, or dishonest practices;

Be it Resolved: By the Radiological Society of North America, in Executive Session at its Thirteenth Annual Meeting, that: (1) Radiological diagnosis is a consulting specialty of medicine, the chief function of which is to aid practitioners of other specialties and of general medicine in the diagnosis and treatment of disease; (2) that it is improper and unethical for any radiologist or any organization practising radiology to offer discounts or commissions, or other financial inducements, to attract patients either directly or through reference by other physicians; (3) that it is unethical for any radiologist or organization practising radiology to make charges to referring physicians for services rendered, but that all such charges must be made against the patient for whom such services are rendered; (4) that a commercial X-ray laboratory is defined as one which advertises to make radiographic or fluoroscopic examinations for physicians and surgeons for the avowed or apparent primary purpose of financial gain; (5) that it is improper and unethical for any radiologist to become affiliated with a commercial X-ray laboratory; (6) that a stock company or corporation with physicians and surgeons as stockholders, offering dividends as an inducement to refer cases to a laboratory owned and operated by such company or corporation, is unethical, and that such dividends be regarded in the same light as commissions or discounts. A group of physicians may properly own and operate an X-ray department or laboratory, providing the earnings therefrom are employed for the advancement of the science of radiology or other branches of medicine or the maintenance and improvement of service to patients, but not as an inducement to stockholders to refer cases in the hope of receiving greater dividends.

Resolved: (7) That an X-ray laboratory is to be considered unethical if therefrom emanate diagnostic reports based upon the radiologic observations of technicians who do not possess a medical degree or license to practise medicine.

The mere signature of a physician to such reports is to be regarded as an evasion of this rule unless such signatory has actually made the observations and drawn the conclusions upon which such reports are based.

Be it Further Resolved: (1) That no radiologist engaging in unethical practice according to the above definition shall be eligible to membership in this Society, and that no technician affiliated with an unethical or commercial laboratory shall be eligible to registration; (2) that a copy of these resolutions be forwarded to each state medical society with a request that they be published in the official Journal; (3) that a committee be appointed to obtain the official approval of these resolutions by the American College of Radiology, the American College of Surgeons, and the American College of Physicians.—(*Radiology*, May, 1928).

A Severe Indictment of the Navy's Health.

In the "Mail Bag" column this morning appears a letter of some interest from Dr. W. Armistead Gills, U. S. N., Retired, of Richmond, Va.

Dr. Gills has been heard from before, in the columns of this and other newspapers and on the platform. He has a grievance, and he does not hesitate to air it. It is not a personal grievance; it is a complaint of consequence to every citizen of the country if it is well founded. He alleges, with the backing of figures, that our naval policy pays too little attention to safeguarding the health of the personnel.

It stands to reason that the standard of health in the navy should be extraordinarily high. The country picks and chooses in accepting enlistments. It should get the best of raw material to begin with. Life in the navy should be conducive to health. The food is plain and wholesome. One would expect a man whose food and hours of rest are regulated, who lives in the open air and whose condition is under constant supervision, to score a high health rating. The figures cited in the Gills letter indicate that this is not the case.

A showing of 60,628 out of 113,756 men in the navy on the sick list (which means incapacitated for duty), at some time last year; of 2,239 invalided out of service, and of 1,271,416 days lost through illness, looks none too good. Dr. Gills gives the reason for these conditions, and demands their correction. But he is a crusader carrying on almost single-handed a campaign against an intrenched and organized beaureaucracy fortified behind entanglements of red tape, and like others who have inveighed against official abuses or neglect in the military services of the nation, he is making unappreciable, if any, progress.

It seems to "*The Record*" that the criticisms of Dr. Gills are worthy of some attention at the hands of the Secretary of the Navy. If his contentions are ill-founded their fallacy ought to be exposed. If what he says is true, measures should be taken, by the head of the Navy Department, to secure a marked improvement in the navy's health. The personnel of the navy is entitled to even more thoughtful care than its fighting machinery.—(*Philadelphia Record, April* 12, 1928.)

Roentgenology

Roentgen Ray Diagnosis.

LEOPOLD JACHES, M. D., Radiologist, Mt. Sinai Hospital, New York City.

(*Continued from page* 138).

Fractures and Dislocations

The first attempts to use roentgen rays for diagnosis were naturally made to study fractures. Surgeons soon found the rays of inestimable value not only in the determination of the presence and nature of a fracture but also in studying the results of methods of treatment. It is no exaggeration to assert that the treatment of fractures has been revolutionized by the advent of the roentgen rays. One no more hears the surgeon maintain that all that is wanted is a good functional result and that perfect anatomic alinement is not necessary. The skilled surgeon will not rest satisfied with "a good functional result," knowing full well that such a result is not often obtained without a good anatomic result. He has learned that good function is frequently interfered with by irregularities in the alinement of the fragments, especially when near a joint. So now that he has a reliable means of determining the success or failure of his efforts, he will not rest content until the reduction of the fragments has attained the best possible alinement. Exceptions, of course, there are to this as to every other rule. In fractures of the femur, or in fractures of both bones of the forearm or leg, perfect alinement is often unattainable except by operative intervention.

While the diagnosis of fractures by the roentgen ray is comparatively simple, it must not be forgotten that some fractures are difficult of demonstration, either because of their peculiar nature and location or because they involve the junction of bone and cartilage. The latter is absolutely radiotransparent. As examples may be cited the fractures of ribs in the axillary region or at the costochondral junction. In the axilla they are not demonstrable because, the fractures being generally of the greenstick variety, there is no displacement and the views that can be had of the ribs are such that the line of fracture is between the two fragments and is overlapped by both.

Likewise, small fissures which are of great clinical importance, such as often occur in the head of the radius, may be difficult to find, unless one has roentgenograms in several different positions. Or epiphysial separation may be so slight that none but the most experienced will detect them, and then only by careful comparison with the opposite side. Such comparison should be the routine in the study of fractures in the young, as the cartilaginous epiphysial lines might be mistaken for fractures, or the converse may happen.

The fact that cartilage is transparent to the rays is of great importance in the study of fractures in children and adolescents. An injury to cartilage alone, not involving bone, is

out of reach of roentgen ray diagnosis. Similarly, the tears in the semilunar cartilages of the knee are most often missed. In such cases a negative finding does not absolutely rule out the suspected lesion.

Having mentioned these exceptions, one can affirm that by means of the roentgen ray it is possible to determine the presence of a fracture and to disclose its exact location, its nature, whether single or multiple, the position of the fragments, the method of attack in the efforts at reduction, and the result of those efforts. Callus in its early stages can be determined only by means of the roentgen ray.

Dislocations are also readily diagnosed by the roentgen ray, and differential diagnoses between fractures, dislocations or a combination of the two are made with absolute certainty. Stereoscopy will aid where the dislocation involves the shoulder joint or in the more rare luxations of the hip.

Here a note of warning should be sounded. Fluoroscopy should never be resorted to for the purpose of diagnosing fractures or dislocations. After the diagnosis has been made by means of the roentgenogram, reduction may be controlled with the aid of the screen. The result of this procedure should be checked up, however, by means of the roentgenogram. In this field co-operation between roentgenologist and surgeon is of the utmost importance.

Arthritis

From the diagnosis of fractures and dislocations it is merely a step to the study of the various forms of arthritis. The changes that occur at the articulations of the bones can be demonstrated with great precision, whether they are the calcium absorbing (atrophic) states in the early inflammatory stages or the bone-productive (hypertrophic) states of the chronic or of the healed stages of the disease. The atrophic lesion is shown by the disappearance of the articular cleft, by the approximation of the contiguous bones, and by a transparency of the bones which almost equals that of the soft tissues.

The roentgenologist soon learned that, with the exception of tuberculosis, the roentgenogram does not present any differentiating signs between the various infectious forms of arthritis. There being no characteristic bone changes, whether due to the streptococcus, gonococcus or other micro-organism, he can only state that the process is acute or chronic, that it is extensive or limited. There is an exception to this rule though: In the knee-joint the gonorrheal infection often attacks the cartilage on the posterior surface of the patella and the adjacent portion of the femur, causing a close approximation of these bones in the early stages and, unless the disease has been checked, ankylosis takes place in the later stages.

In the early acute stages there is seen an enlargement of the soft tissues and after three weeks marked absorption of the calcium salts showing the bones involved in good sharp outline, with the corticalis of eggshell thinness, but generally as transparent as the soft tissues.

The only form of arthritis that is almost characteristic in its appearance is tuberculosis in its early stages, when there is not only marked absorption of the calcium salts but also a peculiar inflammation of the soft tissues, causing a general haziness of the entire joint.

Another characteristic finding in tuberculosis is caries sicca, which is found most frequently in the shoulder joint in middle age, where it causes distinct erosions in or near the head of the humerus.

When the tuberculous process has undergone healing, the bones resume their normal consistency; but marked deformity often remains if the process has not been at least partially checked in its early stage.

Syphilitic arthritis may sometimes be differentiated from the other forms by the presence of periostitis in the shafts of the bones adjacent to the joint involved.

Charcot's joints and syringomyelia are generally characterized by the enormous deposits of bony detritus with marked destruction of the joint, while other neurologic diseases may show purely atrophic changes.

A differential diagnostic point in Charcot's joint is the absence of pain notwithstanding the severe anatomic lesion, and no atrophy of the bone.

Perthes' disease, which affects the head of the femur, flattening it, but not involving the entire joint, occurs sometimes in adolescents. It is generally self-limited. Its etiology is unknown. (*J. A. M. A.*, Feb. 18, 1928).

(*To be continued.*)

Proceedings of Societies

University of Virginia Medical Society.

The ninth meeting of this Society was held on May 7th, at the Chemical Building, University of Virginia, Dr. Bray presiding.

Dr. H. E. Jordan exhibited the head of a calf presenting internal hydrocephalus of the anterior and middle portions of the cerebrum. The extreme pressure atrophy of cerebral tissue was shown and the preliminary studies on the gross pathology were recounted. The calf lived for two months and presented no distinctive features but seemed to be like any other ordinary calf.

Dr. J. E. Kindred presented a study of an earth worm, Pheretima indica, which he found in this region. The particular interest in this creature is that the centers for leucocyte formation are sharply demarked and can be studied separately. Illustrations of the various types of leucocytes and of their positions of formation were given.

Dr. Homer Smith gave the principal discussion of the evening and outlined the main purposes that had engaged his attention in research for some years and which are inducing him to continue his studies in tropical Africa.

He first reviewed briefly the biologic tree back into ancient geologic periods and indicated by a diagram the apparent relationships between the older and the subsequent developing forms. In this connection he emphasized those developments which he considered to be of supreme importance in the development of the series ending with man. He has been particularly interested in the capacity of the body or of cells to maintain a biologic and osmotic balance in the presence of varying external conditions. In the simplest animals the osmotic pressure is the same within the body cavity as in the surrounding sea water. As the biologic scale is ascended the animal has become able to preserve its internal integrity in a surrounding of plain water and later forms have acquired the power to maintain their internal body balance of fluids even when living entirely out of water. He considered particularly the relation of the body fluids to evolution, especially those factors which affect the osmotic pressure of the body fluids and the phylogenetic significance of urea and other nitrogenous substances.

He has already studied types of mammalia and other orders, including reptilia and amphibia, with reference to the role of urea in maintaining the equilibrium of the body fluid under conditions of terrestrial and aquatic life and will go to Africa for the purpose of extending these studies by observations on lung fish.

The tenth meeting of the University of Virginia Medical Society took place on May 14th at the University Hospital, Dr. Bray presiding.

Dr. W. E. Bray reported the data relating to a patient discharged from the University of Virginia Hospital about a year ago with a doubtful diagnosis of typhoid fever. The patient returned recently on request and samples of his blood were tested against Bacterium tularense, giving a positive agglutination in dilutions of 1-80. This creates a plausible probability that the patient was suffering from tularemia. However, he did not apparently have either glandular enlargement or ulcerations and no history could be obtained of exposure. If it was tularemia it must be thought of probably as an intestinal form which hitherto has been found only in infections developing among laboratory workers.

A case of blastomycosis was presented by Dr. D. C. Smith and Dr. Raymond Kimbrough. A man working in lumber developed a sore on the back of the hand which persisted and spread. Later a big ulcerating area developed on the back of the left thigh. X-ray revealed a condition in the lungs so widely spread as to suggest the picture of disseminated pulmonary tuberculosis, although the lungs present hardly any lesions on auscultation and percussion except increased fremitus. The patient is being treated with intravenous injections of methyl violet on the basis of work of Dr. E. S. Sanderson a year ago, who found that 1:1,000,000 of methyl violet will usually inhibit growth of blastomyces.

Dr. W. H. Goodwin reported a case recently operated on that had come in on the Urological Service on account of retention of urine of unknown causation. Examination of the cord by X-ray with the use of lipiodol revealed a tumor between the eleventh dorsal and third lumbar. The very curious sensory and motor findings on the lower extremities and the condition of the sphincters were discussed. At operation a tumor as long as one's finger was found, the upper pole of which was

intimately infiltrating with tissues of the spinal cord. The lower end of the tumor was removed. In the discussion Dr. Bray reported that sections were those characteristic of gliosarcoma. Dr. Neff added the account of the urological findings and of the condition of the sphincter and bladder wall musculature and of secondary hyperplasia of the verumontanum.

The main address of the evening was given by Dr. Hugh Trout, of Roanoke, Virginia, and was an interesting discussion of varicose ulcers. This discussion, accompanied by numerous illustrations and by moving pictures, included a discussion of the underlying and anatomical features of the venous circulation, particular emphasis being laid on the necessity of establishing and maintaining adequate lymphatic drainage. Surgical procedures were described, with diagram, for the attainment of these objectives, and cases were referred to which had been successfully treated.

Dr. Bray announced that there would be no more meetings of the Society until next autumn.

Adjournment.

The Augusta County Medical Association

Held its regular quarterly meeting in Staunton, May 2nd, with a good attendance. An excellent program was enjoyed by those attending, papers being read by Drs. H. G. Middlekauff, of Weyers Cave; Guy R. Fisher, of Staunton, and H. F. White, of Fishersville. Dr. J. F. Fulton is president and Dr. W. F. Hartman secretary.

The Tazewell County Medical Society,

Which now holds its meetings at the time of the Clinch Valley Medical Society meetings, has re-elected Dr. J. W. Shawver, Richlands, president, and Dr. Isaac Pierce, Tazewell, secretary. They report that Dr. T. H. Clark and Dr. W. E. Ritter are new members of that society and the following members have moved out of that territory: Drs. J. P. Haller, C. O. Foree, T. M. Trousdale, and Dr. John M. Bailey.

Dr. Isaac Peirce, Tazewell, was elected delegate to the State Society meeting in Danville, and Dr. W. R. Williams, Richlands, alternate.

Dickenson-Buchanan Medical Society Organized.

The doctors of Dickenson and Buchanan Counties, Virginia, have combined and organized the above named Medical Society and secured a charter from the State Society. Dr. J. C. Moore, Fremont, was elected president, and Dr. L. W. Newland, Splashdam, secretary-treasurer. Other members of this Society are: Drs. J. C. Sutherland and R. L. Phipps, Clintwood; Dr. T. C. Sutherland, Haysi; Dr. M. G. Rock, Trammel, and Dr. J. G. Storie, Grundy.

The next meeting of this Society will be held at Haysi, Va., July 19th.

The Medical Society of Virginia, Maryland, and District of Columbia

Held its regular semi-annual meeting at Upper Marlboro, Md., May the 16th. Dr. Hugh McGuire, Alexandria, Va., was the retiring president. Several interesting papers were presented and the election of officers was held. Dr. J. E. Sansbury, Forestville, Md., was elected president; Drs. J. A. Cahill and G. B. Trible, of Washington, D. C., vice-presidents; Dr. Wm. T. Davis, recording secretary; Dr. Joseph D. Rogers, corresponding secretary; and Dr. Robert S. Lamb, treasurer. The three last named officers (all re-elected) are of Washington, D. C. Nine doctors were elected to membership. It was decided to held the next meeting in Washington, D. C., in the Fall.

Following the business meeting, the Society was delightfully entertained at dinner by the president, Dr. J. E. Sansbury, who gave a most interesting account of the practice of medicine in the rural districts.

Woman's Auxiliary, Medical Society of Virginia

DOCTOR: PLEASE CALL ATTENTION OF YOUR WIFE TO THIS DEPARTMENT.

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary and Treasurer, Cottage Toll Road, R. F. D., Norfolk, Va.

Origin and Development of the Woman's Auxiliary to the American Medical Association.

By MRS. C. P. PENCE

If a thousand years in God's sight is but a

day, and a decade is but a twinkling in the history of a nation, then one must think of the life of the Woman's Auxiliary to the American Medical Association as a tiny thread, running through the annals of history, scarcely visible from the viewpoint of time.

But so golden is the texture and purpose that, in less than ten years, its luminous rays can be easily traced upon the pages of America's history. On May 4, 1917, thirty-one very earnest, efficient doctors' wives met and formed a permanent organization, naming it, "The Woman's Auxiliary to the Dallas County Medical Society". They set a seal upon the source of this benevolent movement that has grown and widened into a great social, educational and philanthropic work, coiling and weaving its radiant light into the hearts of thirty-one states of America and lo! its work has just begun! The efficiency and success of this organization is not easily rivaled. Such concrete, constructive results are seldom attained. The secret of this success is embodied in the fact that there is no turning aside nor looking backward. But each president or leader points to the same great goal with the same object in view, that of unselfish service and loyalty—loyalty to our husbands and their profession, to our homes and country—with a will to do and a heart to serve, be it in a social, educational or philanthropic way.

It is said the doctors' wives organized to foster friendship and good will among the families of the profession. To say this is true is but a feeble way of expressing the care and thoughtfulness—yet tenderness—that constantly manifests itself in a thousand different ways, which means far more to each of us than space permits expressing. But to scan the official records and note its progress, its widening, its going forward on its unerring, unchanging course until the thread of gold is woven into every department of service embodied in its scope, one is forced to realize it was organized for something greater and more far-reaching than mere entertainment. It is a constructive, resourceful, unique organization, unheralded by a predecessor, moving in an atmosphere of eloquence and sweetness, filled with the poetry of truth and a vision of its own dignity.

We are indebted to Mrs. John O. McReynolds for having conceived the idea of this great work. With the hearty co-operation of strong, earnest, cultured women, the organization was not only led armirably through its pioneer period, but succeeded in stamping its name indelibly upon the pages of history as a leading benefactor in the World War activities.

Even before the Dallas County Auxiliary's plans as an organization were perfected, they sought to interest the doctors' wives over the State in the great movement. The vision embodied in the spirit of service quickly awakened their interests and, by official requests, copies of the constitution and by-laws were sent out over the State and letters were written explaining the work, suggesting county organization. The result was most gratifying. In 1920, when the State Medical Association met at San Antonio, Texas, a permanent Woman's Auxiliary to the State Medical Association was organized.

The State Auxiliary's first effort was to organize the State by counties. This proved a stupendous task, due to the vast area of Texas. The doctors had found it necessary to divide the State into fifteen districts, so the Woman's State Auxiliary followed likewise. A council woman was placed at the head of each district, and through her the counties are organized and guided. Thirty-six are well organized at the present, co-operating with the State Committee on Prison and Prison Labor Reforms and with the State Child Hygiene Bureaus. Their chairman and council women occupy the chairmanship in social service departments of the State and work through the social service department of the City Federation of Women's Clubs. They co-operate with the Parent-Teacher Association, assist small towns in clean-up campaigns, plan definite health programs, observe State Public Health Week and Child Health Day. Annual physical examinations are stressed. The State Auxiliary also maintains a Student Scholarship Loan Fund, set aside for doctors' children exclusively. They respond in a broad way to American Red Cross and Community Chest work and contributions. The aim of the Woman's Auxiliary to the State of Texas is, to promote health and happiness by guiding its people to a higher plane of thought through education. To this end every member is giving her heart's best.

The result of such constructive work is far-reaching and satisfying in its results. The purity of its purpose soon found its way out of the State and into the heart of the Nation.

In 1922, when the American Medical Association met in St. Louis, a resolution from the Texas Auxiliary was presented to the House of Delegates of the American Medical Association asking that a Woman's National Auxiliary be formed. The resolution was unanimously indorsed and nine States answered the roll call.

Experience from local to state, from state to national, has given a wide scope of knowledge, enabling the Auxiliary to build a constructive program which, when carried out, will be a building whose makers need not be ashamed.

It is the earnest endeavor of the Auxiliary to the American Medical Association to promote dependable health education, impress upon the public a proper conception of the real mission of organized medicine, especially in its crusade of preventive medicine. The body wishes, if possible, to secure moving pictures to illustrate the importance of the annual physical examination by the family physician for each member of every household, servants included.

All health programs and matters of importance are outlined and approved by the Liaison Committee which is appointed by the trustees of the American Medical Association.

With such fortification, the Auxiliaries are and will remain all that the name implies—an aid, a reserve force, followers not leaders, endeavoring to do all work assigned from time to time, to assist in lightening the burdens of humanity by helping to preserve the health of the people, and for this part in the great profession we are thankful. (*Jour. Woman's Aux. to A. M. A.*, Jan., 1928.)

The Truth About Medicine

In addition to the articles enumerated in our letter of March 30th, the following have been accepted:

The Cheney Chemical Co.
  Ethylene-Cheney.
E. Fougera & Co.
  Lipiodol-Lafay.
  Lipiodol Radiologique Descendant.
  Lipiodol Radiologique Ascendant.
Mead Johnson & Co.
  Mead's Powdered Boilable Protein Milk.
Swan-Myers Co.
  Ephedrine—Swan-Myers.
  Ephedrine Inhalant—Swan-Myers.
Winthrop Chemical Co., Inc.
  Phanodorn Tablets, 3 grains.

NEW AND NONOFFICIAL REMEDIES

Pollen Extracts—Hollister-Stier.—Liquids obtained by extracting the dried pollen of plants with a liquid consisting of 48 per cent of glycerin, 5 per cent of sodium chloride and 47 per cent distilled water. For a discussion of the actions, uses and dosage see Allergic Protein Preparations, New and Nonofficial Remedies, 1928, p. 23. Pollen extracts—Hollister-Stier are marketed in treatment sets of five vials and in treatment sets of thirty vials, representing graduated concentrations. The following preparations have been accepted: Alder Pollen Extract—Hollister-Stier; Aspen Pollen Extract—Hollister-Stier; Atriplex Pollen Extract—Hollister-Stier; Awnless Brome Grass Pollen Extract—Hollister-Stier; Blue Bunch Grass Pollen Extract—Hollister-Stier; Box Elder Pollen Extract—Hollister-Stier; Canada Blue Grass Pollen Extract—Hollister-Stier; Cheat Pollen Extract—Hollister-Stier; Common Sagebrush Pollen Extract—Hollister-Stier; Crested Koeleria Pollen Extract—Hollister-Stier; Dandelion Pollen Extract—Hollister-Stier; Eastern Ragweed Pollen Extract—Hollister-Stier; English Plantain Pollen Extract—Hollister-Stier; Giant Poverty Weed Pollen Extract—Hollister-Stier; Kentucky Blue Grass Pollen Extract—Hollister-Stier; Lamb's Quarters Pollen Extract—Hollister-Stier; Mugwort Pollen Extract—Hollister-Stier; Orchard Grass Pollen Extract—Hollister-Stier; Perennial Rye Grass Pollen Extract—Hollister-Stier; Quack Grass Pollen Extract—Hollister-Stier; Red Top Pollen Extract—Hollister-Stier; Redroot Pigweed Pollen Extract—Hollister-Stier; Russian Thistle Pollen Extract—Hollister-Stier; Sandberg's June Grass Pollen Extract—Hollister-Stier; Sheep Sorrel Pollen Extract—Hollister-Stier; Spring Birch Pollen Extract—Hollister-Stier; Timothy Pollen Extract—Hollister-Stier; Velvet Grass Pollen Extract—Hollister-Stier; Western Ragweed Pollen Extract—Hollister-Stier; Willow Pollen Extract—Hollister-Stier. Hollister-Stier Laboratories, Spokane, Wash. (Jour. A. M. A., April 7, 1928, p. 1116).

B. Acidophilus Milk—Adohr.—A milk culture of *B acidophilus* which contains not less than 250 millions of viable organisms (*B. acidophilus*) per c.c. at the time of sale. For a discussion of the actions and uses of bacillus acidophilus preparations see Lactic Acid-Producing Organisms and Preparations, New and Nonofficial Remedies, 1928, p. 228. Laboratory Division of the Adohr Creamery Co., Los Angeles, Calif.

Phanodorn Tablets, 3 grains.—Each tablet contains 3 grains of phanodorn (New and Nonofficial Remedies, 1928, p. 96). Winthrop Chemical Co., Inc., New York.

Solution Ephedrine Sulphate—P. D. & Co., 3 per cent.—A 3 per cent solution of ephedrine sulphate—P. D. & Co. (New and Nonofficial Remedies, 1928, p. 178). Parke Davis & Co., Detroit. (Jour. A. M. A., April 21, 1928, p. 1291).

Ephedrine—Swan-Myers.—A brand of ephedrine—N. N. R. (New and Nonofficial Remedies, 1928, p. 174). It is also supplied in the form of Ephedrine Inhalant—Swan-Myers, a 1 per cent solution of ephedrine in light liquid petrolatum. (Jour. A. M. A., April 28, 1928, p. 1377).

PROPAGANDA FOR REFORM

"Colloidal Gold."—"Colloidal Gold" was developed by Professor Louis Kahlenberg and Dr. Edward H. Ochsner. It is claimed that the remedy has proved far superior to the roentgen ray and radium in the treatment of inoperable cases of cancer and also as a postoperative treatment. The Council on Phar-

macy and Chemistry examined the evidence and reported in 1925 that there was no reason for believing that "Colloidal Gold" offers anything more in the treatment of carcinoma than do the other colloidal preparations that have preceded it. From the circular matter that is sent out for Collodaurum by the Kahlenberg Laboratories, Inc. (successor to the Kahlenberg-Klaus Co.) it appears that this is essentially the same as the product formerly marketed as "Colloidal Gold." Further observations on the use of "Colloidal Gold" which have been published do not seem to permit a revision of the Council's estimate of the product. On the contrary, the new reports strengthen the Council's decision. (Jour. A. M. A., February 18, 1928, p. 564).

Separation of the Active Principles of the Posterior Lobe of the Pituitary Gland.—Using both methods of fractionation by precipitation and methods of dialysis, two portions of pituitary extract were obtained, one of which responded almost entirely to the oxytocic method of assay whereas another portion was found to respond to the pressor method and practically not at all to the oxytocic. Both of these principles have been obtained in a state of highly potent water-soluble powders. It is reported that the substantially pure pressor principle, termed B-hypophamine, has been obtained as a white powder eighty times as potent as the International Standard Powdered Pituitary, while the oxytocic principle, termed a-hypophamine has been obtained in a form 150 times as potent as the International Standard Powdered Pituitary. From this research the indications are that the pressor principle is responsible for the diuretic-antidiuretic action of the pituitary extracts. This work will undoubtedly lead to clinical applications of these principles, though at present the work is in an experimental state. (Jour. A. M. A., February 25, 1928, p. 618).

The "Dr. S. J. Eagan" Fraud.—On December 16, 1927, the Federal Trade Commission issued a "Cease and Desist" order in the matter of Leroy A. Kling, John E. Weddell, William R. Durgin and Cecil Widdefield, said to be co-partners doing business under such trade styles as "Dr. Eagan Manufactory," "Dr. S. J. Eagan," "Dr. Eagan Laboratory," "Pharmaceutical Products, Ltd.," and Kling-Gibson Co. The Commission declared that Kling, Weddell, Durgin and Widdefield under the various "Dr. Eagan" trade-styles were engaged in the business of selling cosmetics, creams, lotions and other toilet preparations on the mail-order plan. The Kling-Gibson Co., an advertising agency, was charged with composing and preparing advertisements for the various quackeries exploited under the names "Dr. S. J. Eagan," "Dr. Eagan Laboratory," etc. The Commission declared, further, that in the advertisements of these enterprises were many false, fraudulent and misleading statements made with the intent of deceiving the public. The case of the Eagan quackery is of more than ordinary interest to those who believe in truthful advertising. (Jour. A. M. A., February 25, 1928, p. 635).

Joyz Yerba Maté.—This seems to be a proprietary form of the rather well known Paraguay tea, which has for its essential ingredients caffeine and tannin. The product is exploited by the International Maté Co., Inc. In the advertisements it is declared that the preparation has "marvelous medicinal qualities," and that it is of use in rheumatism, kidney troubles and nervous debility. Paraguay tea is a popular drink in South America. The exploiters evidently wish to invest the product with medical qualities of a "patent medicine" type as a means of introducing it into this country. (Jour. A. M. A., February 25, 1928, p. 637).

Grapefruit as a "Patent Medicine."—In October, 1927, the *Journal of the Michigan State Medical Society* printed an utterly preposterous article entitled "The Therapeutic Value of Hill Grown Grapefruit." Inadvertently, an abstract of this appeared in *The Journal of the American Medical Association*. There is not the slightest scientific evidence that any kind of grapefruit has any curative virtues in diabetes. The article mentioned vaunts the alleged potency of a special brand of grapefruit; it refers to the case of a Dr. Roy, who has been exploiting himself in this connection for several years and now, apparently, it has led to a real-estate promotion and to the foundation of a sanatorium company by the Michigan physician. (Jour. A. M. A., March 3, 1928, p. 696).

The Tuberclecide Fraud.—Charles F. Aycock, "Consumption Cure" faker, has been debarred from the mails. He has for years sold a fraudulent "cure" for consumption called "Tuberclecide." This nostrum was exposed seventeen years ago; at that time Tuberclecide sold at $15 for a two-ounce bottle and was found by the A. M. A. Chemical Laboratory to be essentially a solution of creosote, or guaiacol, in olive oil. Eleven years ago, he was prosecuted in California, but the case was dismissed. Since then, Aycock has continued to defraud the tuberculous public, until finally the postal authorities have proceeded against him for fraudulent use of the United States mails. About January 1, 1928, a fraud order was issued against the Aycock Medical Institute, Aycock Medicine Company, Aycock Medical Company and Charles F. Aycock. There is reason to believe, however, that Aycock is evading the order by doing business under the name "Tuberclecide Institute," 402 Delta Building, Los Angeles, California. (Jour. A. M. A., March 3, 1928, p. 710).

Book Announcements

Hay Fever and Asthma. Their Cause, Prevention and Treatment. By RAY M. BALYEAT, M. D., F. A. C. P., Instructor in Medicine and Lecturer on Allergic Diseases, University of Oklahoma Medical School; Director of the Balyeat Hay-Fever and Asthma Clinic, Oklahoma City, etc. Second Edition, Revised and Enlarged. Philadelphia. F. A. Davis Company, Publishers. 1928. Octavo of 310 pages, illustrated with 76 engravings including 2 in colors. Cloth. Price, $3.50 net.

Folklore of the Teeth. By LEO KANNER, M. D., Yankton State Hospital, Yankton, South Dakota. Octavo of 316 pages. New York. The Macmillan Company. 1928. Cloth. Price, $4.00.

Educating for Longer Life. Pamphlet.

Twenty-four Thousand Men: What They Did in a Campaign for Better Health During 1927. Pamphlet.

What Do the Scales Tell You? Pamphlet.

Health Films and Minute Movies—for loan without charge except for transportation. Orders should be received for loan of same at least two weeks in advance of date of showing, addressed to Welfare Division, Metropolitan Life Insurance Company, 1 Madison Avenue, New York, N. Y.

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Editorial

Comments on Gastric-Pancreatic Digestive Processes.

The Effect of Ligation of Pancreatic Ducts on Gastric Digestion.

One reads with interest accounts of work performed in research that would throw light upon digestion. This is a subject of large importance and Yesko,* Fellow in Surgery, Mayo Foundation, has brought forward the interesting relationship that may exist between gastric digestion and pancreatic secretion. In this account one notes the recital of changing views that have been held concerning the alkalinity of the duodenal contents as a regulator of the pyloric sphincter, citing Pavlow and Cannon as champions of this view, now challenged and questioned, and restating the more recent belief of Baldy and Eff that "pancreatic juice is the chief alkalinizer, not only of the intestines adjacent to the stomach, but within the stomach itself."

With a view of investigating this physiologic relationship, Yesko used six dogs of adult size. These were placed in individual kennels under conditions of similar nature. A standard test meal of 70 grams of raw horse meat and 200 c.c. of tap water, mixed, was given on the morning of the experiment after starvation of 18 to 24 hours. After an half hour gastric contents were withdrawn by the fractional method, taking away 10 to 20 c.c. every half hour until free hydrochloric acid appeared. After this, fractions were gotten every 15 minutes until the stomach was emptied. Each sample was analyzed for free hydrochloric acid, total acids, and neutral chlorides. Seven hundred tests were made; five tests on each dog, to establish a normal cure. In order to estimate the normal emptying time of the stomach barium sulphate, mixed with acacia and evaporated milk, was used and fluoroscopic observations were made of the emptying of this meal. Plates were made subsequently.

Each dog, having been tested as to normal secretion curve and normal emptying time of the stomach, was prepared for operation. After deep ether anesthesia, midline incision exposed pancreatic ducts. Using Mann's technique, major and minor ducts were ligated on the intestinal side and evulsed on the pancreatic side.

Recovery from operation and regaining of full strength of the animal were gotten on the eighth day.

On ninth day after operation, dogs were subjected to the same test meals and emptying time observations as used before operation. Omitting details, the experiments conducted on the dogs showed that, when all pancreatic secretion was absent;

(1) there was a slight rise in gastric acidity;
(2) the stomach empties faster by one hour;
(3) there was increased protein digestion;
(4) there was an increase in blood amylase;
(5) good health was maintained, but there was progressive emaciation (when both ducts were ligated and evulsed);
(6) post-mortem showed almost complete atrophy of the pancreas.

Contrariwise, the pancreas seems to be dependent, at least in part, upon gastric juice stimulation for its secretion. Bayliss and Starling, cited by MacLeod, starting from the well known experiment of the application of weak acid to the duodenal mucous membrane which excites secretion of pancreatic juice, severed all nerves to that portion of the duodenum, and, on applying acid, found that the secretion continued. They later scraped off the mucous membrane and "ground it in a motor with weak hydrochloric acid (0.6 per cent); and after bathing the solution so as to

*Proceedings of the Staff Meetings of the Mayo Clinics, March 14, 1928—page 79.

coagulate the protein, nearly neutralizing and filtering, they obtained a fluid which immediately caused a copious secretion of pancreatic juice when injected intravenously." This substance they called secretin.

Pancreatic secretion commences when (gastric) chyme enters the duodenum. The nature of the food influences the flow. The amount varies, apparently, with the amount of secretion in the stomach and passed into the duodenum.

Signs of diminished or absent pancreatic secretion may be noted here.

Partial or complete obstruction of the ducts from disease portends chronic pancreatic or gall tract disease. Long after digestive disturbances have held sway in life history of the patient, such obtrusive symptoms as the following denote the presence of grave pancreatic pathology. Diarrhea or loose bowel movements are the most notable symptoms. Bowel discharges of a voluminous formation, occurring early in the day, without pain, showing no blood or mucus, but bulky, putrid, fat ladened, are decidedly suggestive of pancreatic disease with absence of the secretion in the intestines. The association of free fat, and even undigested meat fibers in the feces, is quite pathognomonic of pancreatic disease.

T-Wave Negativity.

Willius* has drawn attention to electrocardiograms exhibiting T-Wave negativity in other than in Lead III, in 130 fatal cases on whom necropsy was performed. Clinical happenings of cardiac nature have been presented, along with pathologic data. The general controversy over the significance of T-Wave negativity in certain leads of the electrocardiogram makes a study of 130 such cases of decided interest to clinicians dealing with heart cases.

It is noteworthy that Willius concludes from his study of this group that T-Wave negativity is not associated with a specific pathologic lesion of the heart muscle. However, it is emphasized: (1) that there was marked cardiac hypertrophy (500 gm. or more), in 55 cases (42 per cent); (2) that there was coronary disease of "significant degree" (graded 2 to 4 plus) in 52 cases (40 per cent). In cases in which there was neither hypertrophy nor coronary disease (23 cases or 18 per cent), three were pernicious anemia; twelve were exophthalmic or adenomatous goiter cases; one was syphilitic aortitis with almost complete atresia of the coronary orifices, and two were cases of adherent pericarditis.

T-Wave negativity in Lead I occurred in 46 cases; T-Wave negativity in Leads I and II occurred in 27 cases; T-Wave negativity in Leads I, II and III occurred in 25 cases; and T-Wave negativity in Leads II and III occurred in 32 cases.

*F. A. Willius—A. J. of Med. Sciences, May, 1928—page 630.

Post Graduate Clinics.

Attention of readers of the Virginia Medical Monthly is directed to the article reprinted by courtesy of *American Medical Association Bulletin*, June, 1927, dealing with the subject of "Extension Work in Graduate Education." (See page 201). Earnest reading of this summary of plans as put over by various states in the past few years is enjoined. Members of the Medical Society of Virginia are now endeavoring, under the leadership of the President, Dr. J. W. Preston, assisted by a committee composed of Dr. J. C. Flippin, Dr. W. T. Sanger and Dr. E. G. Williams, to reach a decision as to whether or not this postgraduate clinical instruction shall be organized and put in operation by the Medical Society for the benefit of its members and, also, to devise, if it seems feasible, the best plans for the administration and application of the idea. A consideration of the experience of other states and methods adopted and used by other states, in carrying on the estimable system for extending clinical knowledge among live and busy workers in the field of practical medicine, is essential to a full understanding of the advantages and difficulties of extension education.

As a fundamental principle one may well conclude that the usefulness of every method of increasing knowledge, scientific and practical, is worthy of adoption. Knowledge is desirable, if not necessary, if one is to "keep abreast" of advancing medicine, to restudy all old "stuff" and to get next to the new "stuff" as it comes in. Every doctor, worthy of the name, desires to keep in touch with new methods of diagnosis, as well as rehearse and review old and accepted methods for recognizing disease, in whatever stage or type it may

be met. The same may be said of the treatment of disease. These practical demonstrations in the "home section" of the active practitioner, in the wide field of pediatrics, medicine and obstetrics, alone, offer splendid opportunity for the revival of interest and knowledge in the noble art and science of medicine.

News Notes

Finals Medical College of Virginia.

The Medical College of Virginia held its ninetieth commencement exercises for the schools of medicine, dentistry, pharmacy and nursing in Richmond, from May 26th through May 29th, 1928. Exercises opened with Stunt Night and dramatics in the John Marshall High School auditorium on Saturday night. The baccalaureate sermon on the following day was preached by Rev. Charles Daniel, D. D., at the First Baptist Church.

On Monday, the 28th, was held the annual meeting of the Alumni Association, which was well attended. Dr. Roshier W. Miller, Richmond, was elected president; Dr. G. G. Dixon, Ayden, N. C., Dr. Harry Bear, Richmond, Mr. W. H. Huffman, Luray, and Miss Mary Ryland, Richmond, vice-presidents; Dr. Charles L. Outland, Richmond, secretary; and Dr. F. H. Beadles, Richmond, treasurer.

The Board of Visitors held its annual meeting at noon that same day. Following these two meetings, there was a buffet luncheon to the alumni in McGuire Hall. The baseball game at Byrd Park in the afternoon between the faculty-alumni and the students resulted in a tie game which was called that the participants might attend the alumni dinner at Commonwealth Club at 6:30 that evening. The order of events was changed this year so that the annual reception and dance were held on Monday evening at Commonwealth Club, and the final exercises at the Mosque Theatre were at 10:30 A. M. on Tuesday, the 29th. On this occasion, Dr. Russell L. Cecil, of New York, an alumnus of the college, delivered the principal address. The honorary degree of Doctor of Science was conferred upon Dr. Cecil at the exercises which followed.

At these exercises, degrees were conferred upon ninety-two in the department of medicine, nine in dentistry, fourteen in pharmacy, eleven in nursing, eight in dental assistants' course, and four were given certificates as clinical laboratory technicians. It was announced that twenty-one of the graduates in medicine would receive commissions as first lieutenants in the Officers' Reserve Corps of the United States Army.

Following are the hospital appointments which were announced at this time:

Memorial Hospital, Richmond, Va.—Drs. Walter C. Elliott, Winfall; Charles H. Henderson, Keysville; Millard D. Hill, Smithfield, N. C.; Wycliffe C. Jackson, Amelia; Fred Y. Ketner, China Grove, N. C.; James W. Love, Richmond; Robert T. McLaurin, Fayette, Miss.; Benjamin F. Phillips, Richmond; John H. Reed, Jr., Richmond; Rufus H. Reitzel, Siler City, N. C.; Earl L. Shamblen, Charlottesville; Robert W. Southerland, Mobile, Ala.; Lacey S. Wornal, Princeton, W. Va.; and Harry B. Yeatts, Danville.

Retreat for the Sick, Richmond, Va.—Drs. David F. Adcock, Oxford, N. C.; Wesley O. Brandon, Hamptonville, N. C.; and Euclid F. O'Neal, Ringgold.

Johnston-Willis Hospital, Richmond, Va.—Drs. Thomas H. Anderson, Richmond, and Carroll G. Bennett, Toshes.

St. Elizabeth's Hospital, Richmond, Va.—Dr. Willis K. Dix, Mears.

St. Luke's Hospital, Richmond, Va.—Drs. Clifford H. Beach, Horace R. Hicks and Wilbur R. Southward, Jr., all of Richmond.

Stuart Circle Hospital, Richmond, Va.—Drs. Garrett Dalton, Pulaski; A. F. Golderos, Guayanilla, P. R.; and Reuben F. Simms, West Point.

Johnston Memorial Hospital, Abingdon, Va.—Drs. James A. Soyars, Danville, and Garland H. Wolfe, Marion.

St. Agnes Hospital, Baltimore, Md.—Dr. Wilbur E. Hoffman, Keyser, W. Va.

Kings County Hospital, Brooklyn, N. Y.—Dr. William F. FitzHugh, Mindes Store.

Charleston General Hospital, Charleston, W. Va.—Dr. Allen S. Lloyd, Richmond.

Kanawha Valley Hospital, Charleston, W. Va.—Dr. Edward J. H. Haboush, Richmond.

Mountain State Hospital, Charleston, W. Va.—Dr. Elmer G. Rex, Reinersville, O.

Chesapeake & Ohio Ry. Hospital, Clifton Forge, Va.—Drs. Raymond L. Claterbaugh, Roanoke, and James W. Frazier, Greenville, Ky

U. S. Army Medical Corps, Denver, Col.—Dr. Clyde L. Brothers, Richmond.

Harper Hospital, Detroit, Mich.—Dr. Thomas L. Waring, Roanoke.

Watts Hospital, Durham, N. C.—Dr. Charles H. Spiggle, Richmond.

St. Francis Hospital, Hartford, Conn.—Dr. Edward A. Dignam, Hartford, Conn.

Hazelton Hospital, Hazelton, Pa. — Drs. Charles R. Bowman, Woodstock, and Lucius H. Bracey, Bracey.

Chesapeake & Ohio Ry. Hospital, Huntington, W. Va.—Drs. Alonzo Huffman, Milton, W. Va., and James L. Patterson, Huntington, W. Va.

V. I. C. Company Hospital, Inman, Va.—Dr. John A. Proffit, Richmond.

St. Francis Hospital, Jersey City, N. J.—Dr. Anthony R. Comunale, Iselin, N. J.

St. Anthony Hospital, Louisville, Ky.—Dr. Arthur D. Steely, Louisville, Ill.

Hospital of St. Raphael, New Haven, Conn.—Dr. Frank Mongillo, New Haven, Conn.

U. S. Marine Hospital, New Orleans, La.—Dr. Oswald F. Hedley, Richmond.

Elizabeth Buxton Hospital, Newport News, Va.—Dr. Asher I. Baker, Newport News.

Gouveneur Hospital, New York, N. Y.—Dr. A. H. Bracey, Jr., Bracey.

Metropolitan Hospital, New York, N. Y.—Dr. Dorothy Kirschbaum, Union City, N. J.

Pan American Hospital, New York, N. Y.—Dr. Antonio G. Gandia (Vila), Toa Baja, P. R.

Norfolk Protestant Hospital, Norfolk, Va.—Drs. Mahlon W. DeLoatch, Severn, N. C., and Claude V. Hollowell, Corapeake, N. C.

Sarah Leigh Hospital, Norfolk, Va.—Dr. Elliott D. Floyd, Bridgetown.

St. Vincent's Hospital, Norfolk, Va.—Drs. John R. St. George, Portsmouth; John R. Tucker, Richmond; and John J. Tyson, Ayden, N. C.

U. S. Marine Hospital, Norfolk, Va.—Dr. George Hess, Hampton.

Montgomery Hospital, Norristown, Pa.—Drs. Edwin C. Miller, Philadelphia, Pa., and Francis M. Teeple, Napoleon, Ohio.

Petersburg Hospital, Petersburg, Va.—Dr. Linwood Farley, Mannboro.

Philadelphia General Hospital, Philadelphia, Pa.—Dr. Percy C. Grigg, Haddonfield, N. J.

Germantown Hospital, Philadelphia, Pa.—Dr. James P. Williams, Richlands.

St. Margaret's Memorial Hospital, Pittsburgh, Pa.—Dr. Alice L. Randall, Charleston, W. Va.

Western Pennsylvania Hospital, Pittsburgh, Pa.—Dr. Thomas B. Hunter, Latrobe, Pa.

Lewis-Gale Hospital, Roanoke, Va.—Drs. Wilbur H. Hale, Narrows, and William N. Thompson, Stuart.

Roanoke Hospital, Roanoke, Va.—Drs. Alton C. Echols, Blackstone, and Emory E. Lovas, War, W. Va.

City Hospital, Springfield, Ohio—Drs. Max M. Fields, Castlewood, and Douglas F. Love, Sydnorsville.

Emergency Hospital, Washington, D. C.—Dr. Walter R. Gladding, Cape Charles.

Walter Reed Hospital, Washington, D. C.—Drs. Claude L. Neale, Saluda, and John R. Wood, Dumbarton.

Ohio Valley General Hospital, Wheeling, W. Va.—Dr. Harry L. Duncan, Moundsville, W. Va.

Columbia Hospital, Wilkinsburg, Pa.—Dr. William H. Earnest, Export, Pa.

Williamson Memorial Hospital, Williamson, W. Va.—Dr. George W. Easley, Chatham.

James Walker Memorial Hospital, Wilmington, N. C.—Dr. William S. Chadwick, Gloucester, N. C.

City Memorial Hospital, Winston-Salem, N. C.—Drs. Norbourne B. Jeter, Belona, and William P. Richardson, Wake Forest, N. C.

North Carolina Baptist Hospital, Winston-Salem, N. C.—Drs. Edward C. Joyner, Suffolk, and Earle R. Ware, Orange.

Eastern State Hospital, Williamsburg, Va.—Dr. Joseph J. Hornisher, Richmond.

Other members of the graduating class in medicine are:

Dr. Joseph F. Barrett, Waterbury, Conn.
Dr. William R. Bond, Richmond.
Dr. Harvey B. Haag, Richmond.
Dr. Stafford O. Handy, Stuart.
Dr. Archibald P. Hudgins, Richmond.
Dr. Alfred Koerner, Richmond.
Dr. Alexander L. Martin, Jr., Richmond.
Dr. Frances Isabelle Seymour, Long Island, N. Y.

Danville Meeting of the Medical Society of Virginia.

For the second time in its history, the Medical Society of Virginia has accepted the invitation of the Pittsylvania County doctors to meet in their metropolis—Danville. Now, after nearly a half century—forty-eight years

to be exact—our State Society will meet in that splendid city this Fall. With the new hotel recently erected there, Danville is now in position to take care of as many of our members as can arrange to attend. Let's make this a banner meeting!

Dr. J. W. Preston, Roanoke, is this year's president. His invited guests are Dr. Dean Lewis, Baltimore; Dr. E. Starr Judd, Rochester, Minn., and Dr. Seale Harris, Birmingham, Ala.

All members of the Pittsylvania County and Danville Medical Society have been assigned committee work in connection with the meeting and it is needless to say our members will have a pleasant and interesting time at this meeting. Dr. I. C. Harrison, Danville, is general chairman of the committee on arrangements.

Narcotic Tax Not Increased.

It is gratifying to note that the proposal to increase the tax on physicians and others under the Harrison Narcotic Law from one to three dollars a year was overwhelmingly rejected in the U. S. Senate on May the 15th.

Early Diagnosis Campaign Helpful.

Fifty-four counties and nine cities in Virginia have conducted an Early Diagnosis Campaign during the Spring months. This work has been carried on under the auspices of the Virginia Tuberculosis Association through its local committees and associations and has proven most successful.

The Early Diagnosis Campaign, which is a nation-wide movement, is designed to teach the public the danger signals of tuberculosis and the advice given is summed up in the slogan used on the posters and literature, "Let Your Doctor Decide". Doctors have reported that as a result of the propaganda it is noticeable the number of their patients who come in for a health examination.

The Virginia Tuberculosis Association does not conduct clinics now, and all of that work is done by the Bureau of Tuberculosis Out-Patient Service of the State Department of Health. The work of the Association is largely educational in its nature, and at present the emphasis is on summer nutrition camps for children, which are being conducted through the local committees. The local associations are very helpful in providing clothing and the necessary money for sanatorium treatment for indigent cases and will be glad to co-operate with any physician who needs such help for his patients.

The Virginia Tuberculosis Association reports that during the campaign an unusual number of requests have been received for the pamphlet "Diagnostic Standards" from physicians. This pamphlet is furnished free to any physician who wishes it.

Fewer School Children in France as Result of the War.

Recently published statistics of elementary education and illiteracy in France indicate a large numerical decline in the generation born during the years of the war. Only 3,500,000 children were reported in the elementary schools of today, in comparison with 5,500,000 in 1913.

Dr. James L. Hamner,

Mannboro, Va., is at the Willard Parker Hospital, New York City, where he is taking up special work on diseases of children and communicable diseases. His appointment was for three months, effective May 1st.

Dr. E. N. Lillard, of Culpeper County, recently of Miami, Fla., is looking after Dr. Hamner's practice during his absence.

Dr. Charles R. Robins

Has just been elected president of the Richmond, Va., Rotary Club, for the ensuing year.

Doctors As Delegates to Democratic Convention.

In addition to names given in our last issue, names of the following doctors have been noted among those named as delegates to the State Democratic convention in Roanoke in June: Drs. W. C. Webb, Disputanta; P. E. Tucker and G. L. Morriss, of Buckingham; Perkins Glover, Arvonia; R. A. Bennett, Bedford, and Dr. F. F. Davis, Sassafras.

The Virginia State Dental Association,

At its annual meeting held in Roanoke, the latter part of May, Dr. W. G. Delp, of Rural Retreat, presiding, elected Dr. J. E. John, of Roanoke, president-elect. Dr. R. C. Walden, of Richmond, became president on the last day of the meeting. Dr. A. M. Wash, of Richmond, was re-elected secretary-treasurer.

Married.

Dr. William Painter Gilmer, Clifton Forge, Va., and Miss Helen Newman, Corinth, Miss., February 8.

The American Gynecological Society,

At its annual meeting held recently, elected Dr. C. Jeff Miller, of New Orleans, La., presi-

dent, and re-elected Dr. Floyd E. Keene, of Philadelphia, secretary.

Dr. M. H. Watson,

Of the class of '24, University of Virginia, Department of Medicine, is taking up special work at the New York Post-Graduate Medical School and Hospital.

Dr. R. A. Vonderlehr,

Assistant Surgeon in the U. S. Public Health Service, has been transferred from Cobh to Dublin, Irish Free State.

The Johnston-Willis Interne Scientific Club

Was organized May the 30th, when a number of the former interns met at the Johnston-Willis Hospital, Richmond, Va. Dr. J. Morrison Hutcheson, Richmond, was elected president, and Dr. F. S. Johns, Richmond, secretary-treasurer. At the scientific meeting in the morning, papers were read by Dr. E. H. Richardson, of Baltimore, Dr. J. D. Willis, of Roanoke, and Dr. D. P. Scott, of Lynchburg. The afternoon was given over to golf and at night a banquet was held on the roof garden of the hospital.

Dr. William E. Fitch,

Recently of Buffalo Lithia Springs, Va., announces that he has now located at Bedford Springs and Baths, Bedford, Pennsylvania.

The Fifth International Medical Congress of Industrial Accidents and Occupational Diseases

Will be held September 2-8, 1928, in Budapest, Hungary. Very extensive plans for scientific, social and scenic attractions in connection with the Congress are announced. The Hungarian Consul General, of New York, will grant free vise of passport to all Visitors to the Congress and their families. A goodly number of participants have signed up for the Study Tour to the Congress, sailing on August 16th from New York on the S. S. "Munchen", visiting capitals and health resorts in Central Europe, and returning, after the Congress, via The Riviera and Spain, embarking from Gibraltar, on September 28th, for the return trip.

Physicians interested to join should communicate with Dr. Richard Kovacs, Secretary, 223 E. 68th Street, New York, from whom also any further information regarding the Congress can be obtained.

Dr. and Mrs. Lockburn Scott,

Norfolk, Va., expect to leave on the 19th of this month for a visit to two of their daughters in Winnipeg, Manitoba, Canada. Dr. and Mrs. Scott lived in Winnipeg before moving to Virginia.

Dr. Brumfield to be Director of Health Unit.

Dr. W. A. Brumfield, for several years health officer at the Virginia Polytechnic Institute, Blacksburg, Va., recently tendered his resignation in that capacity. On June 15th, he became director of the nine-county health unit composed of Prince Edward, Charlotte, Lunenburg, Nottoway, Amelia, Powhatan, Cumberland, Buckingham and Appomattox Counties. Mrs. Mary K. Cauthorne, graduate nurse, will be associated with him in this work.

Dr. and Mrs. M. H. Tredway

Returned to their home at Emporia, Va., early in June, after spending a month in New York.

Dr. and Mrs. George A. Stover,

South Boston, Va., recently attended the Southern Baptist Convention at Chattanooga, Tenn.

The Southside Virginia Medical Association

Will hold its regular quarterly meeting in Richmond, June 19th, as guests of its Richmond honorary members who are not affiliated with any group. The meeting will convene at the Commonwealth Club at 2 P. M. Following the afternoon session, the members will be guests of these doctors at dinner at the Club. "Artificial Feeding of Infants" is the subject for general discussion at this meeting. Dr. W. D. Prince, Stony Creek, is president, and Dr. R. L. Raiford, Franklin, secretary-treasurer.

Hospital Service in the United States.

The American Medical Association, through its Council on Medical Education and Hospitals, has issued its seventh annual presentation of hospital service in the United States. This report shows that there are 6,807 registered hospitals in the United States. Virginia, with a population of a little more than two and a half million, has a total of 118 registered hospitals. These hospitals have a capacity of 15,271 and an average census of patients of 12,003.

Our New Dress.

Our Publication Committee, always desirous of having our official organ worthy of the traditions of our State Society in appearance as well as reading material, has made an innovation with the present issue of The Virginia Medical Monthly in the form of the cover which has been adopted. The color that

they have chosen shows that they are men of keen judgment and fully aware that this is a season of bright colors.

Dr. F. O. Plunkett,

Lynchburg, Va., having recently completed a six months' internship at the Chicago Lying-In Hospital, has re-opened his offices in Medical Arts Building, Lynchburg, and is limiting his practice to obstetrics and gynecology.

Dr. Charles C. Tucker

Has recently returned to his home in Blackstone, Va., after spending several weeks in New York.

Mixt Pickle.

Dr. George E. Wiley, of Bristol, has recently completed a new book of negro dialect stories, entitled "Mixt Pickle." It is a collection of tales and sketches of the old-time negro, which are both humorous and true to life.

Dr. Wiley is quite gifted as a recorder of the dialect of the old Southern negro who now lives only in memory. As a boy he was familiar with the darkeys of other days and with their traditions and customs and songs. He treasured up and has transmitted to the public through the medium of the printed pages many interesting incidents of negro life and many highly amusing stories which he gathered from the negroes or are woven about them and which he tells in a most entertaining way.

The publishers speak very highly of "Mixt Pickle," saying in part: "This book is not a novel that is read and thrown aside. It will be kept in the library and read by the grown-ups and by the children and grandchildren. It is a record of some of the dialect of the old negroes whose folklore will, within a decade, be past with them, will become legendary history, and will only remain as recorded by those who have been capable of writing their peculiar dialect."

"Mixt Pickle" merits the compliment which the publishers have paid it. Many of the tales which it contains are based on fact and are therefore as much truth as fiction. The book, which is on sale at the Kemble-Cochran Book Store, Bristol, is well worth the $2 at which it is priced.

Dr. Guy Hinsdale,

Hot Springs, Va., as is his custom, left the first of June for Kennebunkport, Maine, where he will spend the summer months.

Dr. Edgar M. McPeak,

Recently at University, Va., has located in Washington, D. C., where he is associated with Drs. Groover, Christie and Merritt.

Captain J. B. Mears,

Of the Medical Corps, U. S. Navy., has been transferred from the U. S. Navy Hospital, Canacao, P. I., to Receiving Ship, Navy Yard, New York.

Dr. Ray A. Moore,

For some time at Phenix, Va., has located in Farmville, Va.

Dr. Roshier W. Miller,

Richmond, has been elected chairman of the Richmond City School Board, and Dr. Clifton M. Miller has been elected vice-chairman.

Commander Micajah Boland,

Medical Corps, U. S. Navy, has been detached from duty at Naval Operating Base, Hampton Roads, Virginia, and assigned to duty on the U. S. S. Florida.

Dr. Tom Williams,

Of Washington, D. C., will spend six weeks in Durham, N. C., where he will lecture on mental hygiene at Duke University, beginning June the 12th.

Lt. Commander E. V. Valz,

Medical Corps, U. S. Navy, has been transferred from the Naval Air Station, Pensacola, Florida, to the U. S. S. Arkansas.

The Association of Surgeons of the Southern Railway,

In annual session at Virginia Beach, Va., the latter part of May, selected New Orleans, La., as its next place of meeting and elected the following officers: President, Dr. Walter S. Nash, Knoxville, Tenn.; vice-presidents, Dr. George H. Searcy, Tuscaloosa, Ala.; Dr. Arthur P. McElroy, Union, S. C.; Dr. William H. Frampton, Charleston, S. C., and Dr. Samuel H. Hairston, Meridian, Miss.; recording secretary, Dr. William W. Harper, Selma, Ala.; executive secretary and treasurer, Miss Edith A. Foltz, Washington, D. C.

Virginia Cities Make Notable Health Record.

Following its annual custom, the *Journal of the American Medical Association* publishes in May the typhoid record made by all American cities of the hundred thousand over class. In Virginia there are two of those cities, Richmond and Norfolk, and it is extremely gratifying to announce that these two cieties are the only ones in the South that hold positions on the honor roll. Richmond did not have a

single typhoid death during 1927 and Norfolk had a typhoid death rate of 1.1 per hundred thousand.

The only other Southern city approaching these figures was Louisville, with a rate of 3.1, almost triple the death rate of Norfolk. The rates for the other large cities ran from 7.3 to 14 along the Atlantic coast States, 3.1 to 16 in the South-Central group, and from 4.3 to 8.7 for the Louisiana-Texas division.

Attend Mayo Clinics.

Dr. Vincent Archer, of the University of Virginia: Dr. Joseph T. McKinney, of Roanoke, and Dr. Hunter B. Spencer, of Lynchburg, have just returned from the Mayo Clinic, where they spent several weeks in the study of X-ray work.

Special Dermatology Number.

American Medicine, New York, has just issued a Special Dermatology number, which contains twenty-seven original contributions, many by men of international reputation. The articles are very comprehensive in scope and this number should be of almost text-book value to many practitioners. The publishers announce that single copies are fifty cents.

The American Ophthalmological Society,

At its annual meeting held recently in Washington, D. C., elected Dr. Walter R. Parker, of Detroit, Mich., president, and Dr. Emory Hill, Richmond, Va., secretary. The next meeting is to be held at Hot Springs, Va., in June, 1929.

Grand Rapids Has a Junior Vocational School.

This junior vocational school is for retarded children at least fourteen years of age who are not eligible to the regular city vocational schools because they have not completed the eighth grade. The completion of any specific grade is not required. Half of the school day is spent in training in the shop or work room. It is said to be proving successful with children who are restless and discontented in the regular grades.

The Economy of "Mothers' Pensions".

Three Georgia orphanages have found very advantageous the system of giving "pensions" to mothers with dependent children. It is not only good for the children, but it costs much less than maintaining them in the institutions, and enables the institutions to extend care over a larger number of children.

Doctors on Camping Trip.

Drs. Harry B. Stone and Hugh H. Trout, of Roanoke, Va., with their sons, expected to start about the tenth of June on a motor trip to the Pacific coast. They are carrying their camping paraphernalia with them and will go and return by different routes so as to visit many places of interest. They expect to be gone six to eight weeks.

Dr. Susan W. Field,

After a leave of absence, will resume her duties as resident physician to State Teachers' College, Farmville, Va., for the summer session. She has been spending some time at her former home in Lincoln, Nebr.

Mr. William L. Sohl,

Bridgeport, Conn., of the Laine Chemical Company, announces that he has regained his health and hopes to see the profession in this section at an early date.

Dr. Charles A. Young,

Roanoke, Va., has opened offices in Shenandoah Life Building, that city, and will limit his practice to ophthalmology.

Dr. Leroy L. Sawyer, Jr.,

Of the class of '22, Medical College of Virginia, recently of Roanoke, Va., has located in Washington, D. C., with offices in The Farragut. He is limiting his practise to diseases of the ear, nose and throat.

Oklahoma Now in the Birth-Registration Area.

The recent addition of Oklahoma to the birth-registration area, which now includes 42 States and the District of Columbia, brings the total population within the area to 92 per cent of the estimated population of the United States.

International Study of Infantile Paralysis.

A gift of $250,000 from Jeremiah Milbank for a three-year international study of infantile paralysis will be participated in by Chicago, Columbia, Harvard, and New York Universities, the University of Brussels, the Lister Institute, of London, the Metropolitan Life Insurance Co., and, it is hoped by the committee in charge, by other institutions here and abroad. The head of the department in charge of the work in each institution is included in the membership of the committee.

Summer Play Schools for New York Children.

The Child Study Association maintains 19 play schools for New York City children who spend their summer vacations in the city. The

children come to school at 9 A. M. and stay till 4:30 or 5 P. M., receiving a hot luncheon at noon. Courses in music, dramatics, handwork, and nature study are provided. The children are given medical examinations and health instruction, and are taken for bus rides and short trips and sent to the country if opportunity offers. A similar play center is maintained in Cleveland, where for the past two years the board of education has given the use of a school building, and last season supplied two teachers.

Harmon Grants for New Playgrounds.

Real estate operators anywhere in the United States have a chance to share this year in the $40,000 set aside by the Harmon Foundation for the establishment of permanent public playgrounds in new residential developments. It is the intention of the foundation to divide the total amount among not less than 20 of the residential developments which may qualify.

The Medical Society of the State of North Carolina,

At its annual meeting, which closed on May the 2nd, elected Dr. Thurman D. Kitchin, Wake Forest, president; Drs. W. L. Dunn, Asheville, David T. Tayloe, Washington, and William D. James, Hamlet, vice-presidents, and re-elected Dr. L. B. McBrayer, Southern Pines, secretary. Dr. James K. Hall, Richmond, Va., who presented a most excellent paper before the Society, was elected an honorary member of the Society.

The West Virginia State Medical Association

Held its annual meeting in Fairmont, the latter part of May, under the presidency of Dr. C. A. Ray, of Charleston. There was a registered attendance of 354 and the meeting was an excellent one in every respect. Dr. Harry M. Hall, of Wheeling, was elected president for the next annual meeting, which is to be held in Martinsburg, in the Spring of 1929. Other officers elected are: vice-presidents, Dr. J. A. Duff, Martinsburg, Dr. W. C. Swann, Huntington, and Dr. B. F. Bone, Moundsville; treasurer, Dr. T. M. Barker, Charleston; Editor of journal, Dr. James R. Bloss, Huntington, and chairman of the council, Dr. R. H. Dunn, South Charleston. Mr. Joe W. Savage, Charleston, is the secretary-business manager.

Factory Legislation by the Peking Government.

New labor legislation promulgated by the Peking Government toward the end of 1927 is worthy of note, although not actually enforced except in a very limited area. It applies to factories normally employing 15 or more persons, or where the work is dangerous or injurious to health. The minimum age for such employment was raised from 10 to 12 years for boys and from 12 to 14 years for girls. The maximum working day for women and young persons remains at 8 hours, but their work at night is now prohibited from 10 P. M. to 6 A. M., instead of 4 A. M. Former standards with regard to work certificates and factory inspection have also been raised.

A "White List" of Candy Manufacturers.

A "white list," or list of recommended candy manufacturers, is what the Consumers' League of New York suggests as one of the means of improving conditions for workers in candy factories and of insuring the wholesomeness of their products. It makes this suggestion after an investigation of 25 factories in New York, mainly by direct observation and actual work in the factories. This industry employs largely young inexperienced workers: at the time of the last census, three-fifths of them were under 21 years of age. It was found to be characterized in general by low wages, excessive overtime, and a very large amount of turnover among the employees.

Only 3 of the 25 factories required the legally prescribed food-handlers' card from the worker on entry, while in 10 factories the workers had never heard of medical examinations. Only 3 factories were very clean, and 12 were unnecessarily dirty. Facilities for handwashing were often inadequate and inconvenient.

The Boston Newsboys' Clubhouse.

A house on Beacon Hill has been purchased by the founder of the Boston Newsboys' Foundation, Mr. Harry E. Burroughs, and will be completely renovated to serve as the newsboys' headquarters and clubhouse. Mr. Burroughs has also given $100,000 to carry out the program for vocational and advanced trade courses, musical organizations, and social activities which has been planned.

The Graduate Nurses' Association of Virginia,

At its meeting in Richmond, last month, was well attended. The program included a number of excellent papers and addresses and social features added much to the pleasure of those attending. Miss Martha V. Baylor, of Roanoke, presided. Officers elected for the

new year are: President, Miss S. Virginia Thacker, of Roanoke; vice-presidents, Miss Blanche Webb, Norfolk, and Miss Virginia Hendrick, Richmond; secretary, Miss Lily Walker, Danville; and treasurer, Miss Jessie W. Faris, of the State Board of Health, Richmond.

Opportunities in Medical and Hospital Work in the U. S. Civil Service.

Such is the caption of a pamphlet recently issued by the U. S. Civil Service Commission, Washington, D. C. It gives a great deal of information which will prove quite interesting to any one anticipating entering the Service in any of the medical, dental or nursing fields. It also tells of the advantages of government service. Those of our readers interested in Civil Service work should write the U. S. Civil Service Commission, Washington, D. C., for a copy of this pamphlet.

Wanted—

To rent at once, well-equipped office and furnished home, for six months, in a city which promises excellent permanent location. Address "A. W.", care the VIRGINIA MEDICAL MONTHLY. (Adv.)

For Sale—

The following equipment of the late Dr. E. H. Heaton: Large Fisher cabinet—latest type machine; Morse wave generator; deep therapy lamp, and galvanic battery outfit. All are in perfect condition, having been used only one year. Will sell for half price. Address Mrs. E. H. Heaton, Leesburg, Va. (Adv.)

Wanted—

Eye, Ear, Nose and Throat specialist for association with established group, located in best part of the South. Only high-class, experienced man, good appearance and pleasant personality, who is willing to work hard and cooperate with group, need apply. Salary increased if makes good. Southern man preferred. Give age, training and experience in first letter. Wonderful opportunity for the right man. All communications will be held confidential. Address "No. 120," care VIRGINIA MEDICAL MONTHLY. (Adv.)

Wanted:

Single doctor to take charge of practice—mostly office work—from July 20th to September 20th. Attractive location in Virginia. If interested, apply to No. 123, care VIRGINIA MEDICAL MONTHLY, Richmond, Va. (Adv.)

Obituary

Dr. Edward E. Feild,

One of the oldest members and an ex-president of the Norfolk County Medical Society, died May 29th, at St. Vincent's Hospital, that city, after a long illness. Dr. Feild was born in Greenesville County, Va., seventy-three years ago and studied medicine at the University of Virginia, from which he graduated in 1879. He had been a member of the Medical Society of Virginia since 1884 and served a term on its executive council. In 1894, Dr. Feild was the recipient of the $100 prize offered by Dr. Hunter McGuire to members of the State Society for the best essay on "Appendicitis".

Dr. Frank Mason Dillard,

Alexandria, Va., died in the Emergency Hospital, Washington, D. C., May 18th, after an illness of several months. Dr. Dillard was born at Partlow, Va., thirty-eight years ago, and was graduated from the University College of Medicine, Richmond, in 1911. After a year's internship at St. Luke's Hospital, Richmond, he took post-graduate work at the Manhattan Eye, Ear, Nose and Throat Hospital. For the past eight years he has been specializing in this work in Alexandria, where he has been most successful. Dr. Dillard, former president of the Alexandria Medical Society, was a member of the Medical Society of Virginia and of the Alpha Kappa Kappa Medical Fraternity. He counted his friends by the score, was beloved by all with whom he came in contact, and will be greatly missed in the community.

He is survived by his wife and two children. Interment was made in Hollywood Cemetery, Richmond, on May 20th.

At a called meeting of the Alexandria Medical Society, held May 18, 1928, the following resolution was adopted:

RESOLVED: That the Alexandria Medical Society has suffered a great loss in the death of Dr. Frank M. Dillard, one of its active members, and formerly president of the Society: that during Dr. Dillard's residence in Alexandria, he has, through his professional ability, industry, charity, geniality, and personality, established a position in the profession and community which it will be impossible to fill: that the Society extend to Dr. Dillard's family its profound sympathy.

RESOLVED: That a copy of these resolutions be sent to Dr. Dillard's family, printed in the *Alexan-*

dria Gazette, and the VIRGINIA MEDICAL MONTHLY, and spread on the minutes of the Society.

O. A. RYDER,
S. B. MOORE,
HUGH MCGUIRE,
Committee.

Resolutions on Death of Dr. J. S. Blair.

Realizing the loss sustained by the death of the late Dr. J. S. Blair, of Churchville, Augusta County, on March 31, 1928, the members of the Church Hill Medical Society, Richmond, Va., desire to pay tribute to the memory of this distinguished gentleman and physician.

Dr. Blair took his pre-medical work at Washington and Lee University, graduating from that institution in 1875. He received his medical education in Kentucky, taking his degree in medicine in 1879, since which time he has engaged in the practice of his profession in Augusta County.

He was an active member of his county medical society, serving a number of years as its president and also served as president of the school board of Augusta County.

He was a member of the State Medical Society, and also a non-resident member of the Church Hill Medical Society of Richmond, Va.

Dr. Blair was a devout Presbyterian and had for the past thirty years served as an Elder in his church; he was a well informed student of Theology and possessed an abiding faith in his Maker.

During his active life it was his pleasure to minister to the poor and needy as well as those in more fortunate circumstances.

Sincere in his convictions, optimistic in his outlook on life, unbending in his discharge of duty and possessing the noblest attribute of character, he was universally respected, trusted and esteemed.

Therefore be it, Resolved: That the heartfelt sympathy of this Society be tendered the members of his family, that a page of our minutes be set apart as a permanent record of this memorial and it be published in both the local and Augusta papers.

(Signed),
A. S. LILLY,
M. L. BOYLE,
S. M. COTTRELL.

Resolutions on Death of Mrs. Driver.

The following resolutions were adopted by the Woman's Auxiliary of the Norfolk County Medical Society of Norfolk, Virginia, May 28th, on the death of Mrs. Driver, the second president of that Auxiliary:

Whereas, in the death of Mrs. Wilson E. Driver, we have sustained a great loss, therefore be it resolved by our Auxiliary:

That we extend to her bereaved family our sincere and heartfelt sympathy;

That her strong and attractive personality, her devotion to duty, her beautiful life of service leaves to her family a priceless heritage, and to the Auxiliary, this influence of a worthy life and a lofty example.

And finally that a copy of these resolutions be sent to her family, to the official magazine of our organization, and be recorded in the minutes of our Auxiliary.

MRS. STARKE A. SUTTON,
Chairman.

Dr. Martin P. Dillard.

Henry, Va., for many years a practicing physician of Franklin County, Va., died in Rocky Mount, Va., February the 26th, at the age of seventy-five years. Death was due to heart disease.

Dr. Hideyo Noguchi,

Noted bacteriologist, since 1903 an associate at the Rockefeller Institute, New York, died May 21st, at Accra, West Africa, of yellow fever, while completing researches on this disease, for which purpose he went abroad last November. Dr. Noguchi was born in Japan nearly fifty-two years ago. He first graduated in medicine from the Tokyo Imperial University, in 1897, and subsequently studied at the University of Pennsylvania and the Serum Institute of Copenhagen. He had been the recipient of honors from many countries. A statement issued by the Rockefeller Institute says that "In the death of Dr. Noguchi, bacteriological science has lost one of the most brilliant and original investigators and the Rockefeller Institute one of its most eminent scientific workers and one of its most charming and deeply respected members."

Dr. William Leroy Dunn,

Asheville, N. C., prominent tuberculosis specialist, died at Mount Alto Hospital, Washington, May 24th, after a lingering illness. He was a prominent member of the Medical Society of the State of North Carolina and for many years one of the directors of the National Tuberculosis Association. He graduated from the University of Michigan, Department of Medicine, in 1891.

Dr. Carl Putnam Parker,

Seaboard, N. C., a graduate of the Medical College of Virginia, Richmond, in 1915, died April the 6th, of angina pectoris. He was thirty-six years of age and was a former president of the Northampton County (N. C.) Medical Society.

Dr. Benjamin R. Graham,

Wilmington, N. C., died April the 18th of septicemia. He was fifty-nine years of age and had graduated in medicine from the University of Virginia, in 1895.

Dr. Neill MacRae,

Littleton, N. C., died April the 14th, at the age of fifty years. Death was due to pneumonia. Dr. McRae studied medicine at the former University College of Medicine, Richmond, from which he graduated in 1900.

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RICHMOND, VA., JULY, 1928

20 CENTS A COPY
$2.00 A YEAR

THE CAUSES AND TREATMENT OF ARTERIAL HYPERTENSION.*

By THOMAS P. SPRUNT, M. D., Baltimore, Md.

Physiology of the Circulation

Among the wonderful mechanisms of the human machine not the least remarkable is that by which the circulation of the blood is maintained under the varying demands made upon it day by day. The main business of the circulation takes place of course, in the capillaries of the lungs and of the tissues. This capillary bed in the aggregate is much the widest portion of the vascular stream. Here the blood flows more slowly and time is afforded for those exchanges between blood and tissues or blood and the air in the lungs upon which the nourishment of our bodies and life itself depend.

For the maintenance of this capillary flow there is an unusually efficient system of pump and pipe lines in the heart, the arteries, the arterioles, the capillaries themselves and the veins. The regular and rhythmical beats of the heart force the blood into and through the arterial system. The elasticity of the large vessels stores up some of the energy of the heart beat and with the aid of the contractility of the smooth muscle in the arterial wall helps in the propulsion of the blood. The maintenance of a certain degree of contraction of the musculature of the small arterioles (tonicity) offers some resistance to the passage of the blood stream and determines to a certain extent the amount of blood and the rapidity of its flow through any given capillary area. Since the pipe lines of this circulation are not rigid tubes but vitally elastic and muscular ones, it follows that the pressures in the different parts of the circulatory apparatus are not the same. The pressure is quite high in the ventricles during their contraction and in the large arteries next the heart. It gradually diminishes as the individual arteries become smaller and the blood stream as a whole becomes wider; it is considerably lower in the capillaries than in the small arteries and lowest of all in the veins where the blood flow is rapid but under slight pressure.

After the ventricular contraction a wave of increased pressure passes along the arterial tree in the form of the pulse and the pressure at the height of the pulse wave is spoken of as the systolic pressure. Owing to the nature of the arterial walls and the resistance offered by the tonicity of the small arterioles, a fairly high minimal pressure is constantly maintained in the arterial system between the pulse waves and this minimal pressure we speak of as the diastolic pressure. The increase of pressure with each pulse wave or the difference between diastolic and systolic pressure we call the pulse pressure. The pulse reaches even the smallest arteries but disappears in the capillaries where the flow is practically steady and continuous. The term, blood pressure, may refer to the tension anywhere in the vascular bed but among the laity and even in ordinary medical parlance it usually refers to the arterial pressure and particularly to the pressure in the brachial artery where it is routinely measured.

Factors Regulating Arterial Pressure.—Not only is the arterial pressure different in arteries of different sizes but it varies many times a day in the same artery, depending upon the demands made by the body for more or less flow of blood. Recent studies have shown that the arterial pressure is very much less during sleep than during periods of rest in the waking hours and we know, too, that during active exercise the presssure is much higher than when the body is at rest. Some of the factors by which the arterial pressure is normally maintained and varied according to different states of bodily activity are (1) the force and rapidity of the heart beat, (2) the elasticity of the arterial walls, (3) the viscosity of the blood, (4) the blood volume,

*Read before the Walter Reed Medical Society, Williamsburg, Virginia, May 28, 1925.

and (5) the contractility of the small arteries. Under uniform conditions these factors maintain the arterial pressure at a fairly constant level. There seems to be a particularly delicate adjustment between the degree of tone of the small arterioles and the heart action and from the rapidity with which the reciprocal mechanism acts it would seem that the correlation of their activities must occur through the autonomic nervous system. This view is strengthened by the well known influence of emotional and other psychic factors upon the heart beat and upon the arterial pressure, as well as by the results of animal experimentation.

Autonomic Nervous System.—The consideration of the autonomic nervous system or even of that portion having to do particularly with the circulation, namely, the vasomotor nerves, occupies an important chapter in physiology. We are taught that there are special vasoconstrictor nerve fibres kept in a continuously tonic state of activity by a vasoconstrictor centre in the medulla, that there are efferent vasodilator fibres and in addition afferent pressor fibres that tend to stimulate the vasoconstrictor centre and afferent depressor fibres that tend to depress its activities. A similar nervous mechanism aids in controlling the heart's action. Through a thousand reflexes as well as by psychic and emotional factors the different parts of the circulation are coordinated and changes in pressure and in blood flow are brought about.

Chemical Substances.—But in addition to reflex, psychic and emotional factors, other influences may play upon the autonomic nervous system including the vasomotor system. There are chemical substances in the circulating blood, chemical messengers or hormones, that have a special affinity for the autonomic nerves. There are other substances, drugs of one sort or another, that when injected into the blood stream exert pressor or depressor effects. There may be substances derived from the food that behave similarly or substances elaborated during the normal metabolic activities of the body. Such chemical materials in the circulating blood may act upon the vasoconstrictor centre, upon the nerve endings in the vessel walls or even upon the smooth muscle itself.

Pathological Physiology—Hypertension

I have cited in review some of the familiar facts about the circulation in health in order that we may have in mind the different factors to be considered in abnormal states as well as to emphasize the complexities that we must face in a study of the pathological physiology of the circulation.

Types of Arterial Hypertension.—By far the most important pathological states of arterial tension are those of hypertension by reason of their frequency and the complications with which they are associated in the minds of physicians and of laymen alike. The dividing line between the normal and the abnormal is not sharply defined but we are apt to consider abnormal any systolic reading over 145 or 150 and any diastolic reading over 90. Among the many different methods of classifying cases with arterial hypertension we may choose arbitrarily for purposes of discussion the following:

1. Arterial hypertension associated with acute nephritis.
2. Arterial hypertension associated with chronic nephritis.
3. Arterial hypertension with demonstrable arteriosclerosis.
4. Arterial hypertension without demonstrable lesions in kidneys or in arteries.

We need not stop to describe cases in all these groups with which we are all familiar. We will probably all agree that arterial hypertension may be due to an acute nephritis although in the first acute phase the blood pressure may be a relatively insignificant feature. Similarly, we probably all believe that chronic nephritis resulting from repeated acute infections of the kidneys may bring about extreme grades of arterial hypertension.

To us by far the most interesting group is the fourth, in which the high pressure is not associated with any demonstrable organic lesion. This form has been variously designated "essential hypertension", "hyperpiesis", and "hypertensive cardiovascular disease", and is widely accepted as a functional condition due to a hypertonic state of the smooth muscle of the arterioles. What causes this arterial hypertonicity is thus far unknown but is the subject of active speculation and of experimental endeavor. The condition may be discovered during a routine examination for life insurance, in the examination undertaken for some unrelated complaint or there may be symptoms like dizziness, increased frequency of headache, palpitation, fatiguability or mild

dyspnoea that lead the patients to seek advice. The pathological process may progress rapidly, it may show a gradual increase year after year or it may remain stationary for long periods. It may occasionally even disappear entirely if some fortunate change is made in the patient's life habits and activities. But if a patient with essential hypertension is followed, it will usually be found that sooner or later arterial changes become manifest, albumin and casts appear in the urine, the heart shows evidence of the strain to which it has been subjected and there may ensue one or more of the ultimate complications, namely, heart failure, renal insufficiency and apoplexy. The case that was originally placed in Group 4 has now become indistinguishable from cases in Groups 2 and 3, and there are evidences that lead many of us to believe that the majority of cases in the 2nd and 3rd groups were originally of the 4th group, or, in other words, that the majority of cases of arterial hypertension begin as functional disturbances that lead gradually or quickly to organic disease.

Causes of Disease

In searching for causes of chronic arterial hypertension by examining the data at our disposal, let us keep in mind the fact that very few pathological lesions are referable to a single cause. Even with an infectious disease whose extraneous exciting cause is definitely recognized, there are other predisposing etiological factors that determine the susceptibility of the patient, the time, the manner, the extent, the severity of the infection. Physicians have always recognized the existence of predisposing causes. They have noted so frequently that of four children exposed to scarlet fever only one may become ill, that of two inveterate drunkards, one may die of cirrhosis of the liver and the other of delirium tremens, that several members of one family may commit suicide during a period of mental depression while no such happening occurs in another family living under the same conditions. There is here the suggestion of inherent differences in men themselves as well as in their surroundings. But although such facts are of common knowledge, scientific medicine for many decades up until recently paid scant attention to anything except the extraneous causes of disease.

The present century, however, has seen a change in the trend of biological research and this change is beginning to be reflected in medical thought. In the latter half of the 19th century biologists were chiefly occupied in the study of the origin of species from which grew the doctrine of evolution. During the past few decades they have been especially interested in the origin of the individual by the study of heredity and of development. Such studies have made great strides particularly in reference to the lower forms of animal and plant life. The studies of man's development and especially the determination of the relative importance of factors of heredity and of factors of environment are much more difficult by reason of his slow breeding, his polyhybrid nature and his relative inaccessibility to experiment. But there are many reasons to believe that the principles of heredity that have been carefully worked out for lower forms of life are broadly applicable to man and that a scientific basis for the study of the constitution and for predisposition to disease has been established. In the work of Julius Bauer of Vienna, of a number of German psychiatrists, of George Draper, in New York, and of Raymond Pearl and of Wertheimer, in Baltimore, we see the beginnings of such studies.

We know that man like any other animal begins by the union of two sex cells or germ cells, each of which contributes an equal number of chromosomes in which, we believe, the inheritance factors reside. These two cells, fused to form a single cell (zygote), start a new individual that in a suitable environment subdivides into two cells, then into four and then gradually into many millions of cells with differentiation into the various organs and tissues. The individual develops stage by stage to complete adulthood and in the successive stages we have to deal with two sets of factors: (1) those of the germ plasm derived from the father and mother (factors of heredity) and (2) those of the surroundings of the developing being (factors of environment). The heredity of the individual determines the *possibilities* of his development; the surroundings during development are decisive as to the possibilities that attain to *realization*. Both sets of factors are, of course, necessary for the development of an individual. A hundred years ago the greatest emphasis was placed upon the importance of environment, and many of our institutions of today—social, political, religious—are based upon the assumption that all men are created equal and that the differences in men are due to the influences

by which they have been surrounded. Now the pendulum has swung in the opposite direction and biologists are convinced of the overwhelming importance of heredity for the development of the lower forms of life and of its relatively great importance for the development of man. They recognize that the environmental factors are of greater importance in man than in the lower forms of life, by reason of man's longer period of helpless immaturity during which he is most susceptible to the play of environmental influences, by reason of his greater possibilities of development and of his more varied environment.

Hereditary Factors.—Are diseases inherited? In answering this question we should remember that no developed characters are inherited as such, but that our germ plasm may contain the determiners of abnormal traits as well as of normal traits and if the environmental factors are suitable for the development of the abnormal trait, disease may result. Hence we must keep in mind these two sets of factors, especially in the consideration of chronic disease.

What evidence is there that inheritance factors are of importance in the occurrence of arterial hypertension? (1) The fact that certain families may contain several members who develop arterial hypertension relatively early; (2) certain physical and mental traits that are so characteristic of such families and that are so often found in the victims of hypertension. We are all familiar with the stocky build, short thick neck, red face, and tendency to obesity that make up the physical type often spoken of as the habitus apoplecticus, and with the mental characteristics frequently associated with it, namely, the tenseness, the tendency to worry, the over-seriousness, the concentration, the narrowing of interests, the inability to play, traits which often lead to success in business or profession. (3) The frequency of hypertension in victims of migraine, an exquisitely hereditary disorder, usually associated with labile vasomotor nervous systems. (4) The repeated demonstrations by actuarial and statistical methods, so well brought out by Pearl in his little volume called "The Biology of Death", that the duration of life in man is largely determined by his inherited physico-chemical make-up and the experiments on lower animals indicating that longevity is a trait that behaves exactly like a Mendelian character in inheritance studies. If heredity is of such importance for the duration of life, it would seem to be equally so in the determination of the chronic diseases that bring life to an end. At present we may only state these impressions somewhat vaguely, that constitutional inferiorities of the vascular, the nervous, the endocrine and the metabolic systems play an important role in the pathogenesis of arterial hypertension. Later we may learn more of the details by which such tendencies are mediated.

Environmental Factors.—What of the environmental factors of importance in the development of hypertension? Naturally these demand our particular attention for, however great or small the emphasis placed upon innate characters, it is in the study of environmental influences that we may hope to find a more satisfactory and more definite basis for causal therapy and for prophylaxis than we have today. Analyses of the histories of hypertensive patients point toward certain types of factors, that may be roughly grouped as: (1) hygienic faults that increase the wear and tear of life on either the mental or the physical side (over-work, anxiety, worry, excitement, social dissipation, excesses of various sorts); (2) infectious processes (recurring tonsillitis, scarlet fever, typhoid fever, oral sepsis, influenza) that may serve to increase the wear and tear or may perhaps exert some more direct effect upon the structures involved; (3) chronic intoxications of exogenous or endogenous origin (lead poisoning, chronic alcoholism, excessive use of tobacco, over-indulgence in food, chronic constipation); (4) any external influences that may favor endocrine disturbances and metabolic faults (particularly, thyroid dysfunction, the menopause, obesity, diabetes, and gout). There are naturally differences of opinion among physicians as to the relative importance of these several agents. Quite probably different ones are operative in different cases and it is possible that some day we may learn of a common basis of action behind them all. Will it be a neurogenic basis? or a physico-chemical one, or a combination of the two? When we realize the intricacies of physical chemistry, as seen, for example, in the fact that two substances each differing from its isomer only in its behavior toward polarized light may have entirely different pharmacological effects, and, further, the still greater intricacies of physiological chemistry, we may appreciate the difficulties

of research workers and the magnitude of the work undertaken. The comparatively simple chemical mechanism by which the respiratory centre in the medulla seems to be regulated, namely, the variation in carbon dioxide tension of the blood, lends hope that some similar regulatory factor for the vasoconstrictor centre may also be found.

Treatment of Patients With Arterial Hypertension.

A Thorough Study.—The therapeutic plan for patients with hypertension or other chronic ailments should, we believe, follow and be based upon a thorough diagnostic study, by which we endeavor to recognize all discoverable deviations from normal structure and function, to inquire into their possible internal and external causes and to acquire as full a knowledge as is practicable of the physical, psychic and social status of the patient. When the study in a case of chronic arterial hypertension is completed and the diagnostic summary made, we may outline the therapeutic plan with due attention to the several essential features disclosed by the study. There may be needed changes in diet: in the general hygiene of work, play, rest, exercise, baths and care of the excretory functions: the correction of easily remediable defects like the superficial focal infections; psychotherapy; and the necessary symptomatic therapy. All the way through one should mix common sense liberally with one's therapeutic fervor, avoid asking the impossible; attempt to win the confidence of the patient and to secure his whole-hearted cooperation.

Diet.—It is not our custom to limit the diet excessively in these cases. In the absence of renal or myocardial insufficiency there is no conclusive evidence that the hypertensive patient does not handle an ordinary diet satisfactorily. If obesity is present the diet is designed toward a reduction in weight and, if constipation exists, it is arranged with this factor in mind. Since most of us eat more protein than is necessary we do advise that the protein intake be smaller than in the usual diet, preferably not more than the equivalent of 10 per cent of the total caloric value of the food. Salt and condiments may be reduced to the minimum for satisfactory palatability.

Hygiene.—As to general hygiene, in the first place, as many of these patients have been leading very strenuous lives, burning the candle at both ends, and perhaps also are highly nervous and worried about their condition, a thorough rest treatment of several weeks in bed is usually helpful. During this time other features of the therapeutic regimen may be carried out and the physician has an excellent opportunity to explain the situation to the patient, to calm his fears as far as possible, and to enlist his cooperation in the matter of diet and method of life which he should follow in the future. After an initial period when the blood pressure may be followed daily to note its spontaneous variations, it is well to pay less attention to this feature and to explain to the patient that a rise in his blood pressure is often a compensatory process that is beneficial in his circumstances and that the direct height of the blood pressure is far less important than the conditions that underlie it. After the rest period the vacation may be extended in some pleasant and preferably quiet resort before the patient is permitted to take up his routine duties again. It is usually unwise, we believe, to suggest that the patient give up his work, or that it be changed too radically, unless the type of work is entirely unsuited to his condition. Certain changes may often be made with great benefit and these must depend upon the individual study of each patient. An active lawyer, for example, may be persuaded to give up his court work that he has found to be exceedingly trying and to limit his work to the office; or a physician may be urged to give up general practice, to confine his work to office patients, or to accept some position which permits of a sedentary life. It may be suggested to the business man that he delegate the most unpleasant of his duties to others, that he spend the forenoons at his office, reserving the afternoons, or at least three or four of them each week, for rest and out-of-door relaxation. A rest, lying down for an hour after the midday meal, is a valuable provision in all such regimens, and a stipulation should be made that there shall be no work at night. Sometimes patients are advised to remain in bed on a simple milk diet for the last two days in each month, or even for one day of each week.

The matter of exercise is important. We believe that the hypertensive patients without myocardial or renal signs should be encouraged to take mild exercise out of doors daily, for observation has shown that they often do very much better under these circumstances. Golf

in moderation, the milder forms of gardening. walking and motoring are well within his possibilities. It goes without saying that tennis, long hikes and mountain climbing, as well as all the more strenuous out-of-door sports, should be forbidden. It must be remembered that many of the hypertensive patients have never learned to play,—they have never had a hobby outside of their regular occupation. The development of such a hobby may be difficult, but is essential.

In the matter of baths, the hypertensive in good general condition may follow his usual habits in this regard. In the later stages of the disease the bath should preferably be tepid or slightly warm, and never should be extremely cold or extremely hot.

We prefer to regulate the intestinal functions by means of the diet, the drinking of a suitable amount of water, out-of-door exercise, regularity in habit and perhaps also fairly large doses of mineral oil, or the combination of mineral oil with agar. It may often be helpful to give an occasional saline laxative, say once a week.

Focal Infections.—We believe that focal infections should receive appropriate treatment. Definitely infected teeth should be extracted and their sockets curetted. Pyorrhea should have thorough treatment A significant prostatitis should be treated. The question of the removal of infected tonsils or the undertaking of other more serious operations must be determined in each individual case. Most patients in the earlier stages of hypertension stand operative procedures very well. We have found in some cases that those hypertensive states that accompany Graves' disease or that are found in association with thyroid adenomata can sometimes be benefited by a partial thyroidectomy.

Psychotherapy.—Almost all patients with arterial hypertension may be benefited by the use of psychotherapy properly conceived and tactfully and persistently presented. As Barker has said, "psychotherapy in the broad sense of dispelling fear, of inspiring confidence and hope, of educating the patient regarding the nature and course of his malady, of guiding him toward a more hygienic mode of life and of cultivating in him the ability to face the realities with serenity, will be found to be the most beneficently potent and serviceable agent that we possess." Among the laity there is much fear of high blood pressure, for the public, too, has learned that in the long run patients with high blood pressure die from uremia, from heart failure, from cerebral apoplexy or from terminal infections. But it is a mistake to allow patients in the early stages of hypertension to suffer too much from fear. Physicians now know that patients may manifest high blood pressure for many years and even for decades before any serious complications set it.

In arranging the patient's regimen and particularly in reference to psychotherapy it is highly desirable that the attitude of the patient's relatives and his daily associates receive some attention. While the thoughtful husband or wife, or business associate, may aid by timely suggestions in holding the careless patient to his prescribed course, it is most unfortunate to have over-anxious members of the family constantly reminding a patient of his high blood pressure and of the dangers to which he is subject. Such nagging does vastly more harm than good by keeping him in a state of mental unrest and perhaps by driving him to secret dissipation.

Symptomatic Therapy.—In the symptomatic treatment of hypertensive patients we make very little use of drugs designed especially for the reduction of the blood pressure. Iodine preparations, nitrites, benzylbenzoate, yohimbin have been much used by many physicians. In cases of hypertension associated with angina pectoris the nitrites are often really helpful, particularly a hypodermic tablet of nitroglycerin, 1/100 of a grain, held under the tongue until it dissolves.

Symptomatic therapy of single symptoms of which the hypertensive patient often complains may do much to make the patient more comfortable even in the more advanced stages. The insomnia, the headache, the dizziness, the feelings of nervousness and of apprehension, should receive attention. Some of these patients, as we have already noted, suffer from periodic attacks of migraine. These and other headaches should be relieved. Simple remedies may suffice, as, for example, a five grain tablet of aspirin, or a similar dose of pyramidon, or a combination of either of these with a grain or a grain and a half of caffein citrate. If the headache be very severe a quarter or a half grain of codein may be combined with the simpler remedies and is usually effective. It gives the patient a sense of comfort and of confidence to realize that he has a potent

remedy even for the distress of a severe migraine attack. Morphia is rarely if ever necessary for such headaches though it is often given and occasionally leads to drug addiction. For the more frequent and milder forms of headache and for the dizziness, the insomnia and the neurasthenic symptoms, moderate doses of luminal for short periods are very useful, say half grain tablets two or three times a day. Allonal is another useful drug of this type.

Prophylaxis

My remarks have been concerned chiefly with the so-called essential hypertensions or with the cases showing comparatively slight evidences of organic disease. In the later stages the heart, the kidneys and the arteries are the subjects of chief interest and concern, and each patient should receive the treatment appropriate to the situation.

If our summing up of the subject is correct or even approximately so, it is obvious that much more may be expected of prophylaxis than of cure. The physician who discovers in a patient an incipient hypertension, a familial predisposition, or potentially dangerous environmental features may, by suitably educating the patient and by instituting the proper regimen, do much toward limiting the progress of the disease and postponing its lamentable sequels.

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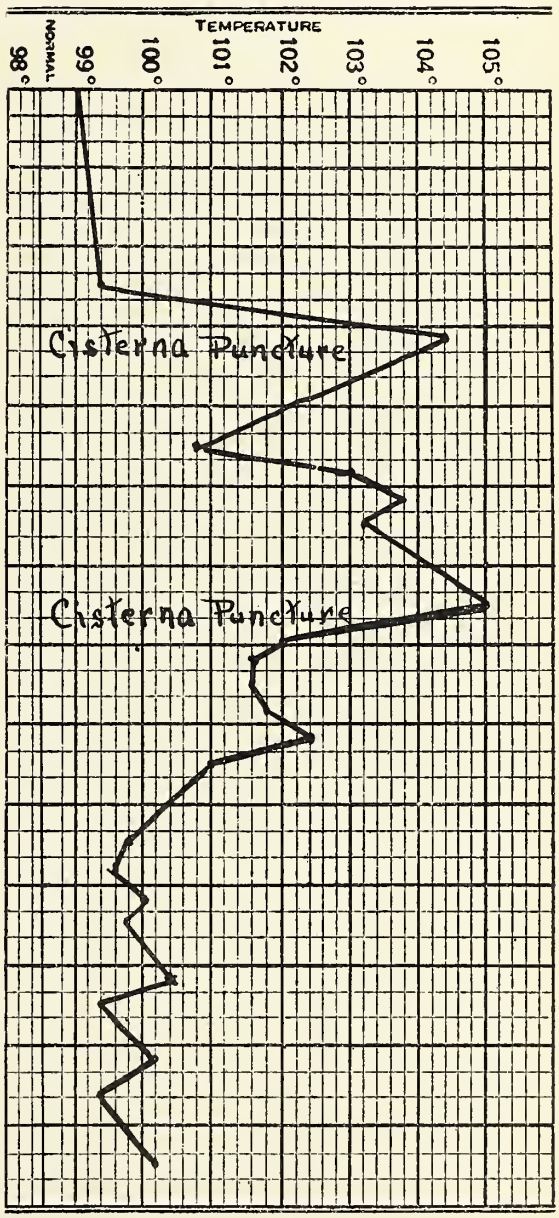
CISTERNA MAGNA PUNCTURE IN THE NEWBORN—REPORT OF THREE CASES.*

By M. PIERCE RUCKER, M. D., Richmond, Va.

Being born is a most hazardous undertaking for the human being, and by far the commonest pathology incident thereto is within the cranial cavity. The etiology of these conditions is not fully understood. Trauma undoubtedly plays an important role, but often the cases that received the most trauma escape and the ones that received the least show fatal hemorrhages. Siegert,[1] for instance, reports the case of placenta previa, with membranes unruptured and the cervix the size of a 5 mark piece, in which a Cesarean section was done. The child weighed 2900 gm. and was 52 cm. long. It was asphyxiated and did not breathe for twenty minutes and never had a strong cry. It died suddenly on the second day of heart weakness. Autopsy showed a bilateral tentorial tear and considerable intracranial bleeding. Asphyxia plays an important role in the production of intracranial hemorrhages as does also rapid delivery. I do not believe that we bear in mind often enough the effect of a quick change from the intra-uterine pressure of the second stage of labor to that of the atmosphere outside of the body. Finally, there is some experimental evidence[2] to show that



Temperature chart of Case III showing the relationship of the two cistern punctures to the temperature curve.

*Read before the Manchester Medical Society, February 7, 1928.

dietary errors on the part of the mother, especially a deficiency of vitamine B, is an etiological factor.

It would seem then that the obstetrician, no matter how skilful he may be, must frequently meet with cases of increased intracranial pressure. Sharpe,[3] with routine lumbar puncture in 5 series each of 100 newborn babies at the New York City Hospital, found a blood tinged spinal fluid in approximately 10 per cent of the cases. Infants that are hard to resuscitate and those that appear abnormal in the first few days of life nearly always have intracranial injury, so much so that Rivière[4] has reported resuscitating with spinal puncture asphyxiated babies that seemed hopeless with the usual methods.

The immediate results of intracranial injury are so grave and the late sequelae so pitiful that any method of diagnosis and treatment is to be welcomed. Dunham[5] reports 10 cases of intracranial injury of the newborn in which he did 27 cisterna punctures. The condition of these infants before the puncture is described as poor in one, critical in seven and moribund in two. In some he did a cisterna puncture after a dry spinal tap; in some the spinal tap was so bloody as to be inconclusive, and in some he did a cisterna puncture without first doing a lumbar puncture. Six patients recovered, and 5 of these were normal physically and mentally at the end of from 9 to 24 months.

My own experience with cisterna puncture in the living patient is limited to the following 3 cases:

Case I. The mother of this patient was a 24-year-old primigravida who was sent into the Sheltering Arms Hospital, in April, 1927, on account of toxemia of pregnancy. Her systolic blood pressure was 212, diastolic 108 m.m. of Hg. The urine contained many granular casts. The patient had three convulsions after entering the hospital and it was then that I saw her in consultation. The presentation was a frank breech, and the baby was delivered with forceps applied first to the breech and then to the after-coming head. The baby, a girl, weighed 3742 gm. (8¼ lbs.) and measured 54 c.m. (21¼ inches) total length. She breathed spontaneously, but in the next few days developed a shrill cry, and would not nurse. Lumbar puncture failed to get any fluid. The cisterna magna was then punctured and 10 c.c. of clear fluid were obtained. The fluid was under a pressure of 207 m.m. of spinal fluid. The baby's symptoms cleared up promptly and she left the hospital in excellent condition. Her doctor tells me that she died suddenly at the end of six weeks. Up until that time she had grown and behaved in a normal manner.

Case II. The mother of this patient was a multipara, 36 years old, who had a funnel pelvis, and who in her last month of pregnancy developed a toxemia, her blood pressure rising to 180/90. On this account labor was induced with a No. 5 Voorhees bag, on May 30, 1927, and the baby was delivered with low forceps. She weighed 3139 gm. (6 lbs. 14½ oz.) and measured 49 c.m. (19¼ inches). She needed no resuscitation and was apparently normal until the second day, when she developed convulsions. A dry spinal tap was done. Cisterna puncture gave a bloody fluid under considerable pressure. The convulsions ceased promptly. The subsequent history shows a normal development, and today she is the picture of health, physically and mentally.

Case III. This patient is the son of a primipara of 20 years. He was delivered October 20, 1927, with mid-forceps at the end of a 43 hour labor. He required no resuscitation but was slow in starting to breathe. He weighed 3685 gm. (8 lbs. 2 oz.) and was 55 c.m. (21½ inches) long. Within 24 hours the baby began to have convulsions and extreme opisthotonos. Spinal tap was dry. With a cisterna puncture 15 c.c. of clear fluid were obtained. It was apparently under considerable pressure. The opisthotonos and the convulsions disappeared for a few hours. The cisterna puncture was repeated the third day (October 23) and 10 c.c. of yellowish fluid obtained. The improvement following this was not so marked. The baby slowly improved, however, and by the time his mother left the hospital he was able to take the breast. His doctor tells me that now he is apparently a normal child.

REFERENCES.

1. Siegert, Friedrich: Tentoriumriss und intrakranielle Blutung bei Kaiserschnitt. *Zentrbl. f. Gynäk.*, 51:1649, 1927.
2. Sure, Barnett, and Schilling, S. J.: The Production of Beriberi in Nursing Young of the Albino Rat on Diets Entirely Satisfactory for Growth. *J. Biol. Chem.*, 74:lxv. 1927.
3. Sharpe, William: Intracranial Hemorrhage in the Newborn. *Am. J. Surg.*, 40:17, 1926.
4. Rivière, Marc: Présentation d'enfants ayant été atteints d'hémorragie méningée au moment de

la naissance. *Bull. Soc. d'obstet et de gynéc.* 16:649, 1927.
5. Dunham, Berman S.: Cistern Puncture in Intracranial Birth Injuries. *Am. J. Obst. & Gynec.*, 11:833, 1926.

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ACTINOMYCOSIS.*

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Actinomycosis may perhaps be defined best in the words of Wright[1] as a "suppurative process combined with granulation tissue formation". The pus contains the characteristic granules, or "Drusen", and is composed of dense aggregates of branched filamentous micro-organisms. The disease, "lumpy jaw," is known to be fairly common in cattle, and was first described by Le Blanc in 1826. Coller and Adie[2] have given a very complete historical resume of this disease in their studies at the University of Michigan. Their historical record shows that the characteristic granules were noted in a case of spinal caries in man by Van Langenbeck in 1845 and by Lebert in 1848, though the specific organism was not discovered until 1876 by Harz in granules found by Bollinger in cattle affected with the disease. The name of actinomycosis bovis was given to the organism by Harz. Prior to this time, in 1868, Rivalta had also made studies of the granules found in the lumpy jaw of cattle. Israel and Wolff, in 1878, isolated the organism from pus from empyema in man. Acland, in 1886, published records of the second case of infection in humans, and Nocard, two years later, described the first case of human actinomycosis in France.

The first cases of actinomycosis to be brought forth in America were those reported by John B. Murphy, of Chicago, in 1885. In 1899, Ruhrah published a collection of fifty-eight American cases, collected from all available sources. He added to this four cases in 1900, thus bringing the total to sixty-two cases. His thorough discussion of the subject bore fruit and shortly other cases were reported. Erving, in 1902, brought the literature to date and brought the total number up to 100 cases. Isolated case reports and articles dealing with its clinical aspects were not infrequent, and in 1921 Sanford and Magrath collected 119 cases from the literature and were able to add 96 cases of the disease observed in the Mayo Clinic. Since then, in 1923, Sanford, in studying the distribution of actinomycosis in the United States, collected a grand total of 678 cases from every available source. This number, he states, must represent only a comparatively small proportion of the number of individuals afflicted with the disease, as no doubt some of them escape diagnosis and a number are not reported. In his study of the distribution of the disease, he finds it quite prevalent in the upper Mississippi valley, but the actual distribution cannot be known until diagnosis is more common and a system of reporting is established. In this series we find a distribution throughout the states; no one section seemed immune. The important point would seem to be that, contrary to our previous ideas, the infection is not rare but is uncommon, and that, once we are on the lookout for it, more cases will be recognized than at present.

Etiology

The causative agent is the actinomyces bovis. The characteristics of this organism I will not describe, as our pathologists, Dr. Lester Newman and Dr. Oscar B. Hunter, will tell us a great deal more in detail. However, it will be of interest to note that this organism is found frequently on fragments of grain, but the usual mode of entrance is through carious teeth, breaks in the mucosa of the mouth caused by foreign bodies, and possibly through acute infection. The fact that some of the cases give a history of an acute onset, a period of quiescence followed by actinomycosis infection, would lend color to this later view. The disease is not contagious, being exceedingly difficult to produce the disease by injecting the infected pus into animals, and on account of its low virulence it would seem that a lowered resistance and natural susceptibility must be present. It is said to occur more frequently in men than in women, more often in the cities than in the country, though this is not altogether true of the many cases reported.

Occupations, such as farming, stevedoring and the corn husking industry are predisposing factors. The disease is most common between the ages of 20 and 40. The usual history in man is that of chewing particles of grass or the inhalation of grain dust which becomes lodged in abrasions of the mucous membrane of the alimentary canal or tonsillar crypt or through a carious tooth. It seems probable that the presence of a foreign particle

*Read before the District of Columbia Medical Society, January 12, 1927.

is necessary for the initiation, if not for the progress of the disease. Cases are reported by infection of dental instruments and splinters of wood.

Pathology

The pathology of this disease shows a destruction of all tissue invaded by the actinomyces bovis, with suppuration and the formation of large masses of granulation and connective tissue. It belongs to the group of infectious granulomata of which syphilis and tuberculosis are the most common of the group. In its invasion of tissue it does not follow the various planes of the body, but invades everything in its path. In this way it resembles a malignant growth. The amount of connective tissue found is often enormous.

Distribution of the Lesions: The fungus may attack any organ, but it shows a special tendency to spread in tissues of the connective-tissue type (areolar tissue, fibrous tissue, bones, and muscles). The commonest site in man is near the angle of the jaw; in cattle, in the tongue or jaw. Usually the disease first involves some part of the tongue, gastro-intestinal or respiratory tract, but primary cases have been observed in the skin and the genito-urinary organs, that is, in the kidney, prostate, and vagina. Secondarily, either by local spread or by metastasis, any tisssue or organ may become involved—pleura, peritoneum, bones, liver, and even brain.

Schlange recorded 100 cases, of which 80 were in the jaw and neck.

Morbid Anatomy: At the site of infection there is a chronic inflammatory process in which small round lymphocyte-like cells are usually seen. This area is soon surrounded by a firm fibro-cellular zone, and there ensues a gradual invasion of the neighboring connective-tissue planes, with hard lumpy masses of chronic inflammatory material. This may take the form of a general diffuse, brawny, infiltration with ill-defined edges, or of a definite collection of tumors which display at first a smooth, regular surface and a dense, uniform consistency. Secondary pyogenetic infection is a common and, in internal organs, an outstanding feature. The abscesses burst and discharge the characteristic granular and viscid exudate, so that eventually there remains a widespread and sinus-riddled diffuse mass of nodular infiltration, with a more or less profuse purulent discharge.

Microscopic Examination of a section shows a mycelium of radially arranged branching filaments lying in each softened area, and surrounded by a zone of fibro-cellular tissue. The sinus walls are lined by granulation tissue, which contains many "pepper granules." In the purulent contents of the abscesses, or in the discharge from the sinuses, the characteristic branching filaments are seen.

Colebrook suggests as a rough test that some suspected pus should be shaken vigorously in a test-tube with water; the ordinary pus elements are then broken up or emulsified; the actinomyces shreds, if present, are not fragmented, and are seen in holding the tube up to the light. They appear as cream-colored spherical bodies about ½—1 m.m. in diameter, which quickly sink to the bottom of the tube.

On slightly squeezing such a granule between a microscope slide and cover-glass and examining unstained under a low-power objective, the characteristic "ray" formation of clubs may be seen between an outer shell of massed leucocytes and the inner core of the granule. On crushing further and staining, the core is seen to be composed of a tangle of

A case of actinomycosis.

filaments, which retain Gram's stain rather irregularly. But, in spite of this statement, the examiner must not be disappointed if he fails to find "clubs"; actual definite "clubs" are not usual in human cases, the granule being merely an irregular mass of filaments.

Clinical Features

The *general symptoms* are often very vague unless an important organ be interfered with; so that, if the disease be in an internal part of the body, diagnosis may be difficult until the tumor becomes large and palpable, or until the fungus is found in the sputum of other ejecta. The victim presents slowly progressive weakness, anemia, and wasting, often allied with fevor of a tuberculous type, and, when questioned, may give a history of employment involving the handling of corn or the inhalation of grain-dust. There is no tenderness, and there may be no pain; when the latter exists, it is often neuralgic and due to pressure.

If the lesion is visible, the conditions described under morbid anatomy appear, namely, a diffuse tumefaction of a firm infiltrating type, nodular in places, in others softening and exuding the "pepper granules" in a viscid and sometimes watery medium. The overlying skin becomes mottled and purplish. True suppuration and lymphatic adenitis are absent unless secondary infection by pyogenetic organism has taken place.

The disease spreads by continuity, but occasionally invades a vein, and then may exhibit metastasis.

In Special Sites: 1. In the *head and neck*, which is by far the most common seat of the disease, the infection nearly always commences from a carious tooth or from an abrasion of the mucous membrane, as in the case to be reported. Thence it spreads to the lower jaw and cheek, though occasionally it may extend to the tongue, upper jaw, vertebral column, or even the base of the skull and brain. The disease pursues the course described above. Multiple abscesses, discharging a sticky exudate often containing "pepper granules," are formed in a mass of diffuse or nodular induration. Simultaneous cicatrization near the primary focus, spreading down the planes of the neck, occurs, until, perhaps, the disease finally reaches the mediastinum, leaving behind it a dense, fibrous track of distorted and nodular scar. It may extend from one side of the neck to the other. Stiffness of the neck and difficulty in swallowing and breathing may result. The great vessels are surrounded, but usually escape, though Ponfick, Schland, and others have recorded cases of erosion into the jugular veins and general metastatic actinomycotic pyemia.

If the disease enters at the angle of the mouth, it may lead to very extensive deformity.

2. *The Abdomen:* In the alimentary tract below the pharynx, primary cases have been reported in the esophagus by Mikulicz and others, but they are rare. Similarly, the stomach and small gut are relatively immune as compared with the large intestine. By far the greater proportion of gastro-intestinal cases occur in the region of the cecum, appendix, and ascending colon. The chief growth is in the submucosa, where it commences as flattened, greyish nodules. Owing to early secondary infection, softening and destruction are early and extensive. The peritoneum soon becomes involved. Dense adhesions form and become riddled by the disease, which thus, preceded by adhesions, spreads to all the surrounding structures and organs. It penetrates any variety of tissue, even bone, until it may ultimately reach the abdominal wall and perforate it, forming many fistulae. In like manner, the abscesses may burst into the bladder, kidney, or pleura. Fecal fistulae are not infrequent, but intestinal obstruction is a rare sequel.

Clinically, the signs are, at first, malnutrition and secondary anemia, sometimes irregular fever, and some intestinal catarrh, followed sooner or later by the discovery of a hard but ill-defined and usually painless tumor, which may show areas of semi-fluctuation. The cachexia becomes more marked, the irregular fever more constant, and, later, the lump may burst on the surface, usually in the cecal region, and discharge the ray fungus. A comparatively frequent occurrence is that appendectomy is performed for sub-acute appendicitis, the wound perhaps heals for a month or so, but then the patient returns with a mass in the ileo-cecal region, which is found to be actinomycotic; almost certainly the appendix was infected with the streptothrix from the beginning, but this fact was not recognized in the first instance. The liver is most frequently the seat of secondary deposits, which suppurate and give rise to irregular-shaped abscesses with walls of varying thickness. Local perihepatitis may occur.

3. *The Respiratory Tract:* Lung infection may sometimes be primary and due to inhalation, but more usually secondary by direct spread from disease in the neck, mediastinum, or abdomen. It manifests itself as a destructive broncho-pneumonia with peribronchial nodules and small, softened areas often com-

bined with interstitial fibrosis. In a few cases the fibrosis is the predominant character. During this earlier stage, local physical signs are often wanting and the general symptoms indefinite.

The Diagnosis

The diagnosis is difficult in many cases. The classical picture of thick induration with discoloration and multiple sinuses give, of course, the evidence of a possible actinomycosis infection. The disease must be differentiated from old tuberculous lesions, Hodgkin's disease, sarcoma, lympho-sarcoma and gumma. The diagnosis will be made absolute by finding the small yellow sulphur granules in the purulent discharge from an incised abscess or open sinus.

Treatment

The treatment in this disease has been varied and with numerous drugs advocated. The administration of potassium iodide in large doses seems to be the drug of choice for administration by mouth. The operative treatment is simply that of opening the small sinus tracts and permitting the exit of the pus when it forms. Radium has been advocated for the disease, and Heyerdahl, the radiologist at Rik's Hospital, Oslo, Christiana, Norway, reports a most remarkable series of cures with radium. He states that he was the first to use radium in the treatment of this disease and that his early experience dates back to 1913. Since that date he has treated twenty-one cases, seventeen men and four women, all with a permanent cure and a good cosmetic effect and little scarring.

Good results are also obtained with X-ray.

Vaccines have also been used with various results reported. The best results are obtained in the lesions around the face and neck, as the lesions spread slowly.

Prognosis

The prognosis of abdominal and thoracic cases is grave and almost always fatal. The best treatment seems to be that of the combined surgical, medical and radiation. This method we will use on our patient, giving him large doses of potassium iodide and X-ray and, when the occasion indicates, opening the small sinuses to permit an exit for the pus. No radical operation is indicated.

I wish to report to the Society a very interesting case of actinomycosis. The patient, a negro, eighteen years of age, male, a street sweeper by occupation, entered Providence Hospital on November 2, 1926, complaining of a swelling of the right side of his face. He gave the following history:

Family history was negative. Previous history was negative except for the usual diseases of childhood, typhoid fever several years ago, and influenza in 1918. He stated that he had worked around horses and cattle three years ago while in the country. History of present illness dates back to August, 1926, when he first noticed a large swelling over the region of the right side of the face. The swelling extended back towards the ear and forward over the cheek. He went to Freedman's Hospital, where the condition was believed to be of an inflammatory character, and an incision was made to drain the probable abscess. No pus was obtained. Following this, he left Freedman's Hospital and his condition was unimproved. The swelling continued to increase and extended back toward the ear and downward, somewhat into the neck and up into the temporal region and caused some swelling of the right eye. Small areas would break down in certain points of the mass and discharge a sero-purulent exudate. He entered Providence Hospital, as was stated, on November 2, 1926, complaining of this swelling in the face, but stated that he had very little pain, though at times a dull ache was present. After the condition of actinomycosis was suspected, it was brought out in his history that, while doing his work as a street sweeper, he would often chew the straws of brooms with which he was working. Examination showed his face with a marked swelling over the right side involving the temporal region, the cheek, the posterior auricular and upper part of the neck above the mandible. The swelling was very hard and fibrous but there were some points of fluctuation. There was a draining sinus on the side of the head, posterior to the eye from which exuded a sero-purulent discharge. In this exudate could be seen small yellow granules and at times many could be expressed. The patient could not open his mouth as far as he normally could, but there was no trismus or involvement of the muscles of mastication. At times several sinuses were present, but there was never any breaking down of the entire mass. His temperature was practically normal, rising occasionally to 100. His chest, abdomen, extremities were all negative. X-ray of the mandible and bones of the

face showed no changes, although sometimes in these cases there are changes in the bones which show a honey-combing appearance in the radiograph. The Wassermann was negative. Blood examination was as follows: Haemoglobin—76 per cent; R. B. C.—3,940,000; W. B. C.—9,400. Examination of the discharge from the sinus showed several yellow sulphur granules and Dr. Newman reported numerous groups of gram-positive streptothrix. Examination of the fresh crushed preparations showed an occasional streptothrix actinomyces or ray fungus.

In considering the diagnosis of this case one

A case of actinomycosis.

had to rule out the possibility of sarcoma, lympho-sarcoma, tubercular lesions, gumma and some inflammatory condition. However, the history is important, which showed that he had chewed the broom straws from brooms which were used in cleaning the street, and this proved to be the causative factor in producing the disease.

The second factor which aided in the diagnosis was the history of the long standing swelling in the face. This, as you recall, dated from August, 1926, and an attempt had been made to operate upon an abscess which was not present.

The third important clinical evidence in this diagnosis was the gradual increase in the size of the swelling to its present "lumpy jaw" appearance.

Fourth, the laboratory findings made the diagnosis positive,—that is, the finding of the streptothrix actinomyces or ray fungus. Other factors, which were noted especially, were the absence of any persistent fever, lack of pain, apparent good health of the patient, negative Wassermann and practically normal blood findings. All of this data correlated made the diagnosis positive.

Summary

1. Actinomycosis is an uncommon disease in this location.
2. There are numerous cases reported, and it is more prevalent in the central states.
3. It should be suspected in any tumor in the region of the neck, face, abdomen or thorax which cannot be definitely diagnosed.
4. All chronic abscesses should be investigated for the ray fungus. The occurrence of any undue amount of blood following any incision and drainage of an abscess should make one suspicious.
5. Internal lesions of the thorax and abdomen prove fatal. Those of the face and neck are amenable to treatment.

Bibliography.

1. Wright, J. M.: Research, 1904-1905. XIII.
2. Coller & Adie: *Jour. Michigan State Med. Society*, 1924. p. 367.
3. Sanford, J.: *Jour. Amer. Med. Assn.*, 1923. Vol. 81, No. 8.
4. Colebrook: *Jour. Exp. Path.*, 1920. Vol. 1, No. 4. *The Lancet*, 1921, I.
5. Heyerdahl: *British Jour. of Radiology*, January, 1926.

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THE SURGICAL MANAGEMENT OF GOITER.*

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Introduction.

The success attained by competent surgeons of today in the management of goiter is the result of two factors: a better understanding of the principles underlying diseases of the thyroid and a more perfected surgical technic. It is not the object of this paper to glorify the surgical technic involved but rather to consider some of the fundamental principles underlying the surgical management of goiter.

History.

According to Da Costa, the term goiter is

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used to denote an enlargement of the thyroid gland not due to a malignant tumor or to inflammation. Among the diseases described by Hippocrates, goiter was not included. Juvenal and Pliny, however, did refer to it, the former in commenting on its frequency among certain Alpine tribes and the latter in stating that certain water wells seemed to disseminate the disease. It was early recognized that the enlargement might affect any portion of the gland or the entire gland and that the enlargement might be diffuse or nodular. Sporadic and endemic forms were differentiated in the fourteenth century and observers finally realized that goiter was sometimes responsible for certain systemic symptoms.

Exophthalmic goiter was first described as an entity in 1825 by Parry, who reported eight cases. Later, Graves, in 1835, and von Basedow, in 1840, described the clinical picture. That the disease might be cured by operation on the thyroid was discovered by Tillaux, Rehn, and Mikulicz. Surgery has made great progress since that time and the development and standardization of the operative technic resulted from the efforts of such men as Mikulicz, Billroth, Kocher, Halstead, C. H. Mayo, and Crile.

But the mastery of the details of operative technic was not sufficient. In spite of accurate and careful surgical procedures, sufficient in themselves in the treatment of simple goiter without thyrotoxicosis, the patient with thyrotoxicosis frequently succumbed to postoperative hyperthyroid crisis. The prevention of such accidents and the general advance in the surgical management of goiter was due mainly to improved classification of thyroid disease and a better understanding of the underlying physiologic and pathologic principles. Of inestimable value were the classification of goiter by Plummer, the discovery of thyroxin by Kendall, the recognition of the use of iodine in goiter by Marine, Plummer and others, the contributions made by various observers to the pathology of the thyroid and the insistence of Crile that goiter patients have complete physical and psychic rest.

Classification.

Plummer's classification of goiter has a functional basis and was arrived at through the careful observation of large numbers of goitrous patients seen at the Mayo Clinic. He was impressed with the fact that there seemed to be certain distinct clinical types of goiter.

The simplest was the diffusely enlarged thyroid of adolescence, the colloid goiter. The next was a nodular type, seen usually in adult life, the so-called adenomatous goiter. Often such glands had been present for many years without causing any obvious systemic symptoms. Such glands he classified as adenomatous goiter without hyperthyroidism. Over a period of years, these goiters exhibited a definite tendency toward hyperfunction and so he distinguished the adenomatous goiter with hyperthyroidism. The hyperfunction of such glands was characterized by the same symptoms as those produced by the administration of thyroxin, the active principle of the normal thyroid and therefore the symptoms seemed to be those of simple hyperthyroidism.

There were, however, certain other patients who exhibited a different symptom complex of hyperthyroidism than that due to the administration of thyroxin. Their symptoms were not merely those of a whipped-up metabolism, but were characterized by mental irritability and emotional instability. Some degree of exophthalmos usually occurred in these patients and therefore the disease was called exophthalmic goiter. This type of goiter occurred oftenest in early adult life and developed rapidly. The thyroid usually showed diffuse enlargement.

Physiology and Pathology.

Some insight into the mechanism of goiter may be had by the consideration of the physiology of the normal and the diseased gland. In 1914 Kendall discovered the molecule of thyroxin, the active principle of the thyroid. Later work seems to indicate that thyroxin acts as a chemical catalyst. It is estimated that the normal thyroid secretes about 0.5 mg. of thyroxin daily and that there are about 14 mg. in the tissues of an ordinary man. The administration of 1 mg. of thyroxin causes an increase of about 2.5 per cent in the basal metabolic rate. Kendall found that the thyroxin molecule contained 65 per cent by weight of iodine. Seaweed ash was used in the treatment of goiter as early as 1170. That iodine was the active principle was discovered by Coindet (Switzerland) in 1820. In 1850 Chatin (France) showed that the administra-

tion of iodine would prevent endemic goiter and cretinism. Marine, in 1918, demonstrated the use of iodine in preventing goiter in school children of goitrous districts. Plummer, in 1922, initiated the use of iodine in treating exophthalmic goiter at the Mayo Clinic.

Plummer evolved an hypothesis to explain the development of goiter. He believes that the colloid goiter of the cretin and the adolescent is a gland storing colloid because of over-stimulation and handicapped by a lack of iodine. Administration of iodine will prevent but not reduce such goiters. Administration of desiccated thyroid or thyroxin gives rest to the over-stimulated gland and allows the colloid to be absorbed. Complete rest is necessary for the treatment of this condition and since it is just on the border-line of hyperthyroidism such treatment should be carefully regulated by the clinical picture and frequent studies of the basal metabolic rate.

The so-called adenomatous goiter represents another reaction of the thyroid to over-stimulation and the lack of iodine. It contains masses of new acini, which have arisen through a demand on the gland for greater activity. This gland tends to grow and sometimes in the third or fourth decades of life, but most often in the fifth decade, causes hyperthyroidism. The average time between the initial appearance of the goiter and the development of hyperthyroidism is about seventeen and a half years. Since these goiters are often present for some time before they are recognized, the average time is more probably from twenty to twenty-five years.

Hyperthyroidism is due to an increase in the production of thyroxin and probably results from over-stimulation in the presence of a sufficiency of iodine. It presents a typical clinical picture which includes: a feeling of warmth, an increased appetite, a loss in weight, a fast pulse, and sweating. The pulse pressure is elevated because of the response of the heart to the increase in the amount of work demanded. Occasionally this slows the pulse. The patient may eat so much that he will gain weight for a time. Atypical manifestations are often due to fatigue of the organism under the increased stress. The heart and stomach may show early evidence of this, the heart by decompensation, the stomach by anorexia, and so forth. Preceding the period of fatigue there is often one of stimulation to such a degree that the patient may feel unusually well.

Differentiation between hyperthyroidism and essential hypertension is sometimes difficult. In a questionable case when the basal metabolic rate is doubtful, it is usually found that in the presence of a nodular thyroid, the symptoms are due to hyperthyroidism and in the absence of a nodular thyroid, they are more likely due to hypertension. In this connection the diastolic pressure is significant. If it is below ninety or one hundred millimeters of mercury, one may suspect hyperthyroidism, but if it is above, hypertension.

Exophthalmic goiter is probably due to over-stimulation of the gland capable of reacting, causing hypertrophy first and then hyperplasia. The first stage, rarely seen clinically before iodine came into use, is probably that of simple hyperthyroidism. This quickly passes into the stage in which the hard driven gland is crippled, proliferates, and produces an incomplete secretion which, according to Plummer's hypothesis, is thyroxin, which lacks an iodine radical. This hypothesis is substantiated by the clinical picture of the disease before and after the administration of iodine, which rapidly changes the syndrome from one of exophthalmic goiter to one of simple hyperthyroidism.

The outstanding features in the picture of exophthalmic goiter are nervous and ocular. The nervous phenomena are psychic, belonging largely to the subconscious mind. They often resemble the early symptoms of alcoholic intoxication. The ocular phenomena are first a stare and then frank exophthalmos, though certain cases of exophthalmic goiter do not have exophthalmos. There is marked mental irritability and emotional instability. The patient unconsciously poses and often goes through a series of useful but purposeless movements. He is quite unaware of his peculiar mental state. The neurotic individual makes excuses for his idiosyncrasies, but the one suffering from exophthalmic goiter does not lack assurance, and usually denies anything unusual in his behavior.

Since the introduction of iodine in the treatment of exophthalmic goiter, the surgical mortality at the Mayo Clinic has fallen from about 3 per cent to 0.6 per cent, and the mortality in non-operative cases is practically zero. The occasional death may be ascribed

not infrequently to some other intercurrent disease to which these patients are as susceptible as others. Many clinics elsewhere have reported similar success with iodine. The most satisfactory preparation of iodine is Lugol's solution (5 per cent aqueous solution of iodine with 10 per cent potassium iodide), administered by mouth, well diluted with water.

The pathologist has contributed rather accurate information concerning the structure of the various types of goiter. The colloid goiter is characterized by alveoli distended with colloid material. The nodular, so-called adenomatous goiter contains numbers of new acini and there are usually some accompanying degenerative changes of various degrees and types. The exophthalmic goiter shows diffuse hypertrophy and hyperplasia with papillary epithelial projections into the acini which contain little or no colloid. Following the administration of iodine the gland of exophthalmic goiter undergoes marked changes which are similar to the less marked changes of such glands during the natural remissions of the disease. The acini fill with colloid material and the gland becomes much firmer to the touch. It may actually increase in size. The iodine may well serve two functions: first, that of enabling the thyroid to proliferate a normal iodine-saturated thyroxin molecule, and second, that of so distending the gland with colloid as partially to block the smaller blood vessels and lymphatics, thus preventing the liberation of thyroxin in the body. These hypotheses are supported by the change in the clinical syndrome and the rapid and marked decrease in the basal metabolic rate following the administration of Lugol's solution. It is important to remember, however, that Lugol's solution will not cure exophthalmic goiter.

Hertzler, in a recent study of 1,000 cases of goiter, attempted to correlate the laboratory observations with the life histories of patients among whom he had lived for a generation. His method was somewhat similar to that of Sir James Mackenzie, who followed the lives of patients with cardiac disease. Hertzler concluded that the various forms of goiter are successive stages of a continuous disease process. Colloid goiter is the simplest type and is found in the young. Slow, irregular involutional changes with proliferation and degeneration cause the formation of the nodular goiter of adults. It is not strictly adenomatous. Such a gland eventually causes a more or less severe chronic toxemia or hyperthyroid state in later adult life. More rapid involutional changes with more active proliferation cause the more diffusely enlarged gland and a more acute toxemia characteristic of exophthalmic goiter and found in early adult life. Rienhoff and Lewis and Thomas working independently, arrived at conclusions rather similar to those of Hertzler and stated that only about 8 per cent of so-called adenomatous goiters showed true benign neoplastic adenomata. The remaining 92 per cent might better be called nodular goiters. The irregular proliferative and degenerative processes with the consequent nodulation of the gland probably parallel closely the exacerbation and remission of symptoms so characteristic of goiter.

The conception of various types of goiter as components of a single disease would explain the apparent difference of opinion concerning the use of iodine. Iodine is especially efficacious in cases of exophthalmic goiter, but many advocate its use in cases of nodular goiter with hyperthyroidism as well. There are undoubted cases where simple hyperthyroidism and exophthalmic goiter occur in the same patient simultaneously and the administration of iodine induces definite improvement. The co-existence of these two forms or stages may be much commoner than generally believed, and hence the improvement in cases of supposed simple hyperthyroidism following the administration of Lugol's solution. Furthermore, the diagnostic criteria in distinguishing exophthalmic goiter from simple hyperthyroidism must be constant for various observers to compare results.

Surgery.

There are certain things which are of importance to the success of surgical treatment of goiter in general. Pemberton in a recent paper considered three especially: the establishment of the patient's confidence, the selection of anesthesia, and the avoidance of technical complications. The patient's confidence may be gained by outlining to him the general plan of management. He must be relieved of apprehension and given both phy-

sical and psychic rest. The importance of rest has been very strikingly shown by Crile.

The anesthesia of choice is local if the co-operation of the patient can be secured. Where supplementary general anesthesia is necessary the experience of the anethetist is probably the most important factor in choosing between nitrous oxide, ethylene, and ether. Whichever is used, deep and prolonged anesthesia should be avoided.

Partial thyroidectomy is the usual surgical procedure for goiter. In most cases part of each lobe is removed and sufficient thyroid tissue is left about the trachea to assure protection to the recurrent laryngeal nerves and the parathyroids. In this connection routine pre-operative examination of the larynx for possible cord paralysis is very important. The superior and inferior thyroid vessels are accurately ligated, preferably as soon as the lobe is exposed. Exposure is usually more satisfactory if the muscles are severed. During the entire procedure hemostasis must be accurate, ligation of large pedicles avoided, and trauma minimized. These measures will prevent the occurrence of injury to the recurrent laryngeal nerves and post-operative hemorrhage which Pemberton considers the most frequent technical complications.

In addition to the measures necessary to the successful surgical management of all goiters certain special measures are necessary in handling goiters with hyperthyroidism, especially those with exophthalmic toxemia. The supposed simple hyperthyroid case should be given Lugol's solution probably if there is any suspicion that an exophthalmic element may exist. The case with a frank exophthalmic syndrome should be prepared for operation very carefully.

Guthrie states that every such patient should have a private room and a special nurse. Pemberton stresses three essentials in treatment: iodine, rest, and a high caloric diet. About ten minims of Lugol's solution three times daily is given to the mild cases and proportional amounts, by rectum, if necessary, to the severer cases. As much as 100 minims may be given in twenty-four hours. Patients should be allowed to be up and around at least part of the day for several days before operation. The rest rather than digitalis is depended on to relieve the decompensated heart.

The proper time for operation is decided by experience rather than by rule of thumb. Preparation may often continue as long as there is improvement as evidenced by the clinical picture and studies of the basal metabolic rate. Care must be exercised that the patient does not pass the period of greatest improvement, and lapse into the state in which Lugol's solution is no longer efficacious. Lugol's solution is a pre-operative aid, but not a cure for exophthalmic goiter! Only a few days of preparation may suffice in mild cases, but a month or more may be necessary in severe cases. General strength must be built up as much as possible. Preliminary hot water injection of the gland or ligation of the superior thyroid vessels may be sometimes advisable though such a necessity has become much less frequent since the introduction of iodine.

The surgeon's responsibility to the patient does not end with the operation. Post-operative care must be meticulous. Lugol's solution should be administered routinely. Large doses may be necessary in severe cases. Symptomatic treatment and rest are important. Friends and relatives must be kept away. Sleep and rest are encouraged by the use of morphine and allonal. Fluids and alkalies should be given freely. Ice packs may be used frequently to combat elevation of temperature since the rate of metabolism increases about ten points for every degree of temperature.

After the patient recovers from the immediate effects of the operation, Lugol's solution in doses of ten minims a day should be prescribed for from two to three months following operation. The patient should lead a moderately quiet life during this period, though the activity of the patient without visceral impairment should not be limited for too long a time if the morbidity rate is to be considered as carefully as the mortality rate.

Early and accurate diagnosis, prompt surgery, careful pre-operative and post-operative management, and some dexterity in operative technic have brought the surgical management of goiter to a very satisfactory state. Of the patient with exophthalmic goiter, the severest of the toxic states, Pemberton goes so far as to say: "Today the patient with exophthalmic goiter is running a greater risk by postponing surgical treatment than in submitting to it." The same statement may perhaps apply equally as well to the majority of patients with all types of goiter.

SUMMARY.

Both perfected surgical technic and a better understanding of the principles underlying diseases of the thyroid were mentioned as necessary for success in the surgical management of goiter. Attention was called to the important contributions to our present knowledge of goiter and its treatment.

Among these, Plummer's classification of goiter and his hypothesis of the pathologic physiology of goitrous disease were considered in some detail. The recent contributions to the pathology of goiter by Hertzler, Lewis, Rienhoff, and Thomas, were mentioned.

General features of the pre-operative and post-operative management were discussed. The importance of Lugol's solution in the pre-operative and post-operative treatment of cases with exophthalmic goiter and the misconception that Lugol's solution would cure the disease were stressed.

BIBLIOGRAPHY.

1. Da Costa, J. C.: Modern Surgery. 1925. 9th Ed. W. B. Saunders and Company, Philadelphia.
2. Guthrie, Donald: Postoperative Treatment of Goiter. *Trans. Assn., Resident and Ex-resident Physicians of the Mayo Clinic.* 1926, VII, 277-280.
3. Hertzler, A. E.: Pathogenesis of Goiter Considered as One Continuous Disease Process. *Archiv. Surg.* 1928, XVI, 61-78.
4. Kendall, E. C.: Thyroxin. Mayo Foundation Lecture, Rochester, Minn. January 20, 1925.
5. Marine, David: Simple Goiter and Its Prevention. *Jour. Am. Med. Assn.* 1926, LXXXVI, 1463-1464.
6. Pemberton, J. de J.: Modern Management of Exophthalmic Goiter. *Calif. and Western Medicine.* 1926, XXV, 619-622.
7. Plummer, H. S.: The Significance of the Findings in Exophthalmic and Adenomatous Goiter. Mayo Foundation Lecture, Rochester, Minn. December 15, 1924.
8. Rienhoff, W. F. and Lewis, Dean: Relation of Hyperthyroidism to Benign Tumors of the Thyroid Gland. *Archiv. Surg.* 1928, XVI, 79-116.
9. Thomas, H. M.: Nodular Goiter with Hyperthyroidism. *Archiv. Surg.* 1928, XVI, 117-124.

LIVER ABSCESS.

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During the year 1926 we admitted to this hospital twenty cases of amebic liver disease, six of them being in the pre-abscess stage and fourteen being fully developed liver abscess cases. During the same period we had a total of 1,167 admissions, so these cases comprised slightly less than 2 per cent of our hospital admissions. We saw approximately five thousand patients in the dispensary (out-patient) service during the year, and since—so far as I know—all such cases diagnosed in the dispensary were later admitted to the hospital for treatment, we find that about 0.4 per cent of the patients seen by us during the year were liver abscess cases, either fully formed or in the process of developing. This is about a normal record for us.

Ameba histolytica is found world-wide throughout the temperate zones as well as the tropics, and, if one is not on the lookout for the various effects of its presence, it is often easy to overlook the real cause of many an illness. I want to call attention to one of its most important manifestations, its effects on the liver, by summarizing our cases of last year.

In this series there were no cases under ten years of age, and only one between one and twenty. There were five cases between twenty and thirty, eight between thirty and forty, four between forty and fifty, with one between fifty and sixty and one above sixty years of age. This corresponds with its general occurrence, for, while it may occur at any age, it is found most frequently in those between twenty and forty years of age.

Six cases were admitted in September, and five in August, while the others were pretty generally distributed throughout the year. Of course, most of our dysentery cases are admitted during the summer and early autumn, but I have never seen a liver abscess develop in any case of dysentery treated here or in any other hospital, so I can attribute no especial significance to the increase in these months of the liver abscess admissions. Any history of a previous dysentery attack that may be obtained usually occurrred months or years previously. August and September are perhaps our two busiest months, and this would have some influence, of course, but not enough to explain the greater number we had during these months.

One thing that attracts attention, and is characteristic of the disease, is the average long duration of the illness before the patient seeks medical aid. Of course, in the United States this would not be so apparent as here, but liver abscess is usually characterized by a long chronic course before admission. In this series,

three patients were of unknown duration, eight had been ill for one month or less, three of them had been ill for two months, one for four months, one for five months, one for seven months and one for a year. I might add that every year we have one or more of these cases giving a history running back for more than a year. I remember one who claimed to have been ill for three years, a story ordinarily hard to believe. These long continued cases are always greatly emaciated, almost exhausted, and have large lumps in the upper right abdomen with well formed abscesses, draining a large quantity of pus when aspirated. I have one case like this in the house as I write this, admitted five days ago with a history going back for seven months. I have had to aspirate this patient each day, each time getting from three to six hundred c.c. of pus. He is so very ill that he has been getting caffeine constantly ever since his admission until this morning.

Thirteen of the twenty were farmers, three were merchants, one a school-boy, one a carpenter, and one a potter, while the occupation of one is unknown, being more a beggar than anything else. Our farming population predominates to about the same extent as the above indicates, so the large proportion of farmers has, I think, no significance.

On admission, only one had a white cell count of below 10,000, while seven had a total white cell count between 10,000 and 15,000, six between 15,000 and 20,000, two had counts between 20,000 and 26,000, while one had a count of 36,000. The case that recurred had on his second admission a white cell count of 14,000. Three charts do not show a blood count, a good example of thinking you have an inflexible routine and finding that it does not always work. All our patients are supposed to have a complete blood count on admission, as a routine, but in the rush of work, with only two technicians in the laboratory, this is sometimes over-looked, especially in cases as self-evident as some of these cases are, when I would not have to wait for a blood count to assist in making a diagnosis.

The differential count in four cases showed less than 60 per cent polys; in five it was between 60 and 70 per cent; five others had either 70, 71 or 72 per cent polys; three had a poly count above 80 per cent, and the case readmitted had 69 per cent. The higher counts are unusual; in our experience, most are below 75 per cent.

I have made no effort to enumerate the number who had ameba or ameba cysts in their stools, although this would be interesting. Every patient on admission has a routine stool examination; this, however, does not include a stained specimen for ameba cysts. When I want this, I have to order it specially, and, although my technicians can do the staining, I have to look over the slide myself, since I have not trained them to look for ameba cysts sufficiently long to depend on their findings. I notice that I have failed to record my findings on the charts in far too large a number of cases, an easy thing to do in the rush of work incident to a one physician hospital like this one. So, to attempt to enumerate the number of times ameba were found, either in the pus or the stools, would give a totally erroneous idea of their frequency of occurrence. When the liver pus is aspirated, a specimen is sent to the laboratory and stained, for me to examine at my leisure, perhaps some days later. Sometimes I forget to look at the slide; more often I go over it but neglect to record what I find on the chart. However, in the great majority of cases, I believe, I do find vegetative forms of ameba in the liver pus, and often also cystic forms in the stools.

The routine stool examination showed hook-worm present in six cases, ascaris in five, and tape-worm in two cases, in each case in association with one of the other parasites, once with hook-worm and once with ascaris.

The trouble in the liver was situated eighteen times in the right lobe, and twice in the left lobe. This represents about the general occurrence, I believe. Also, nineteen of these patients were males, and one female. In liver abscess everywhere males predominate, but, according to Ludlow in his series for Korea, not to this extent. The use of alcohol is supposed to cause a condition in the liver making it easier for the ameba to get a foothold there, and in Korea, while the women often drink and some not very moderately, they do not drink to anything like the extent the men do. Practically every non-Christian man will be an habitual user of the native whiskey. This may explain the great preponderance of males in liver abscess, and also explain why Ludlow found more women with liver abscess up around Seoul (the capital of the country) than we do down here in the country.

There was a palpable tender lump in the upper abdomen fourteen times, twelve times in the upper right quadrant and twice in the upper left quadrant. Sometimes the liver became quite large, extending down more than half-way to the umbilicus. In this series, in six cases there was no enlargement of the liver downwards, and in some of them where we aspirated and found pus, we could demonstrate little or no enlargement upwards. If enlarged, it will generally be tender on pressure, helping to differentiate it from hepatic cirrhosis or other enlargements of the liver which are not especially tender on pressure.

Ten of the twenty patients had cough, severe enough to necessitate having some form of cough medicine ordered. This can be easily understood, however, for an inflammation in the liver can cause irritation enough above the diaphragm to cause a cough.

Seventeen of the twenty gave a definite history of chills and fever, usually recurrent. It is easy sometimes to mistake a liver abscess case for malaria, while at other times it may be confused with a neglected tubercular case of long standing. I have made both of these mistakes, until a more careful examination and longer observation have shown me my error.

In these cases, in their treatment, all received emetine by hypodermic subcutaneous injection, generally in doses of one grain a day, during the whole of their stay in the hospital. One patient received only four injections, but his treatment was interrupted by his death on the fourth day. Three others received only six does each; one patient each received seven, eight and nine doses; two received ten doses; one each eleven and fifteen doses; four received sixteen doses each; one each seventeen, eighteen and twenty-two doses, and two patients received twenty-six doses. The only case that had a recurrence received one-half a grain dose a day after the first three days, receiving ten grains in sixteen days of treatment. As a general rule, we think they ought to have a grain a day, scaling the dose down, of course, for children.

Thirteen of these cases were treated by aspiration of the pus, and by emetine. Six of these were aspirated only once; three received two aspirations; three received three aspirations, and one was aspirated four times. One was operated on by incision and drainage and insertion of a drainage tube. It has been conclusively shown, I think, that aspiration of pus, when present, together with daily injections of emetine, is the treatment of choice in the usual case of liver abscess. We use an exploring needle to locate the pus; then a medium size trocar is inserted down to the abscess and the pus evacuated. The trocar is then removed and a wad of gauze placed over the small opening made by the trocar. One or two c.c. of one per cent novocain solution, a hypodermic for anesthetizing the skin and underlying tissues, another hypodermic with a large calibre needle to locate the abscess, a small knife for making a cut in the skin, and a trocar, are all the equipment needed. Many use only a hypodermic with a large needle, and dispense with the trocar. We try to introduce the trocar over the point of greatest tenderness, perhaps over the lump if there is one in the abdomen, or in an interspace between one of the ribs, usually near the lower costal border. In one of the cases here recorded, I remember that we aspirated through the posterior chest wall, down under the angle of the scapular. We did it here because we felt sure he had pus in the liver, and could not find it by aspirating over the usual sites. He was very tender on pressure over the lower posterior chest wall. I found what I thought was the point of greatest tenderness, inserted my needle, and obtained the characteristic liver pus.

Six of these cases were not aspirated, or, if aspirated, no pus was found. They were diagnosed as being in the pre-abscess stage,—really I suppose it would be better to style them cases of amebic hepatitis. Three of these had blood counts around 13,000 with poly counts of 51, 81, and 72 per cent. Another had 15,000 total W. B. C., with 86 per cent polys; another had a total count of 36,000. with 80 per cent polys, and the sixth case had a total count of 18,000, with 72 per cent polys. The duration of one of these cases is unknown; one had been ill for seven days, another for ten days, another for one month, another for two months, and the last one for a year. Two of these had palpable lumps in the abdomen; six did not. Those who did not have the lumps had well-marked areas of tenderness over the liver. In four of them there were distinct histories of chills and fever, and all cleared up promptly on administering

emetine. So, although no pus was found in these six cases, in each case we fully satisfied ourselves that we were dealing with a case of amebic liver infection. One of these cases was admitted with a tentative diagnosis of perinephritic abscess, was anesthetized, and an incision made over the kidney, with no result, when a closer examination showed us we had made a mistake in diagnosis, and that his trouble was actually in the liver. We gave him emetine and he made a quick recovery.

Of these twenty patients, one died the fourth day after admission. He was a very ill man on admission, age 66. The abscess had ruptured into the thoracic cavity, and he had developed an empyema; then it ruptured into a bronchus. He was expectorating liver pus containing vegetative ameba constantly, was very emaciated and weak, and it was evident from the first that he had little or no chance. One other case left too early, but was well started on the road to recovery; he insisted he was well, and would not remain longer for further treatment. I gave him some Alcresta tablets, with instructions to return if he again became ill, and also gave him a post-card, addressed to us, on which six weeks later he reported that he was entirely well and at work.

Summary.

1. In 1926, we treated twenty cases of liver abscess, or amebic disease of the liver, these cases making up approximately 2 per cent of our hospital admissions, and 0.4 per cent of the patients seen by us during the year.

2. Pus was found in fourteen of these, thirteen of whom were treated by aspiration and emetine, and one by open operation and emetine. No pus was found in six cases, all of whom were treated with emetine, and all of whom recovered.

3. There was one death in a case considered hopeless on admission; the other nineteen all made perfectly satisfactory recoveries.

4. We consider aspiration and emetine administration the best method of treatment in the usual case of liver abscess.

References.

Ludlow, A. I.: Abscess of the Liver. *China Med. Jr.*, XXXI, 207, 1917.

Idem: Supplementary Report. *China Med. Jr.*, XXXIV, 258, 1920.

Idem: Report of One Hundred Operations. *Surg., Gyn. and Obst.*, March, 1923.

Idem: Treatment of Liver Abscess by Aspiration and Emetine. *China Med. Jr.*, February, 1924.

Idem: Amebic Liver Abscess. *China Med. Jr.*, XL, 1165, December, 1926.

SPLENECTOMY IN HEMORRHAGIC PURPURA—WITH REPORT OF A CASE.*

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Introduction.—There is a myth in medical history that the ancients operated on the spleen and removed the organ to improve the wind of marathon runners. However, there seems to be very little basis for accepting these cases as real. This myth was very widely known, as shown by the works of Shakespeare and other authors. It is probably true that surgeons years ago performed an occasional splenectomy for wounds of the organ and probably found out that the spleen was not necessary for life.

Modern splenic surgery is a development of comparatively recent years. Surgeons failed to recognize that the spleen belonged in their domain for so many years because of the obscurity of its normal function and the lack of evidence of its behavior in disease. That the spleen could be definitely removed in safety must have been known prior to 1880, because between twenty and thirty cases had been reported in the literature previous to that date, with a mortality of fifty per cent. By 1900 this number has been increased to nearly 300 cases. In the last twenty-five years this number had increased so that one clinic, the Mayo Clinic, has been able to report over 400 splenectomies.

W. J. Mayo, in the *American Journal of Sciences*, 171-313, 1926, analyzes over 400 cases in which splenectomy was performed. In sixty-eight cases the operation was performed for hemolytic icterus, with four hospital deaths. Eleven cases of chronic hemorrhagic purpura were relieved. Mayo believes these results to be among the most brilliant in surgery. His enthusiasm is mild for splenectomy in myelogenous leukemia. The results following splenectomy for splenic anemia were good, although ten per cent of the persons who recovered from operation died within ten years of gastric hemorrhage.

It is to be expected that the remote results will not be as satisfactory as the immediate results, particularly in splenic anemia, where

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success in large measure depends on the degree of the disease.

Until very recent years splenic surgery has been largely empirical, based chiefly on experience gained by observation of cases after operation. However, today, with the development of the modern laboratory, the function of the spleen has become better known, and certain phenomena occurring in its disease can be recognized. By its use, along with a clear history and a thorough physical examination, the differentiation of such diseases as hemolytic jaundice, splenic anemia, Banti's disease, the purpuras, pernicious anemia, and the leukemias can be made. I mention these diseases because the spleen is supposed to play some part in their pathology. Thus, by the improvement of the laboratory, better diagnosis can be made, and this type of surgery is placed on a most sound basis.

Now, let us consider the known functions of the spleen and the effects of its removal. The spleen is a part of the hemopoietic system along with the bone marrow, liver and lymph glands, and its functions are assumed by the other members of the system when it is removed. The exact manner in which the spleen acts is not definitely known, but certain facts about it are fairly well established:

1. It acts as a mechanical filter, removing from the blood substances above colloid size, such as protozoa and bacteria, which it sends to the liver for destruction.

2. It definitely destroys red cells. Thus, when it is enlarged in disease, naturally an anemia results.

3. It prepares the products of disintegration of the red cells for utilization by the liver.

4. It destroys blood platelets. In disease, as in chronic purpura hemorrhagica, abnormal numbers of platelets are destroyed, and this is the underlying etiological factor in this disease, though not necessarily the cause.

5. It forms lymphocytes. When the spleen is removed, this function is easily assumed by a compensatory hyperplasia of other lymph structures. Other debatable functions are the formation of purins, the storage of iron, and the regulation of cholesterin. It is probable that the spleen takes a very active part in the life of the embryo, but very little is known of the action.

Experimentally, the following results have been noted following the removal of the spleen in the normal animal:

1. Anemia, which lasts perhaps from six to eight weeks.

2. Increased resistance of the red blood cells to various hemolytic agents. This is borne out by the fact that transfused blood cells remain undestroyed over a much longer period after splenectomy.

3. Decreased bile pigment excretion. This fact offers a basis for splenectomy in hemolytic jaundice. As the number of red cells destroyed is reduced, there is less hemoglobin to unite in the formation of bilirubin, and hence a less tendency to jaundice.

4. An endothelial proliferation of the lymph nodes. This probably is a compensatory act to take care of the extra work occasioned by the removal of the spleen.

5. A compensatory hyperplasia of the bone marrow.

6. Increased phagocytosis in the liver. Here, again, the effect is probably compensatory.

Clinically, removal of the spleen causes very little embarrassment to the normal individual, and, according to the experiences of the best observers, one should live a natural life following its removal. Splenectomized individuals have withstood acute illness well, weathered severe accidents and have even given birth to healthy children. The operation itself is usually easily performed unless there are dense adhesions, and carries a low mortality rate. This last statement seems remarkable in view of the fact that most of the individuals operated are apparently such poor risks because of the marked anemia usually present. Successful splenectomy depends upon a careful diagnosis, and as a rule every case should be thoroughly observed over a considerable length of time before the operation is performed.

The development of splenectomy for cure of chronic purpura hemorrhagica is extremely recent. Many text-books published as late as 1923 do not mention the operation in their discussion of the treatment. In 1925, W. J. Mayo reported eleven cases which were apparently cured, and since that time the literature is full of reports of scattered cases. All authors are loud in their reports of the brilliant early results obtained, and are extremely hopeful of consideration of the re-

mote results. This hope seems well founded in view of the fact that many splenectomized individuals have enjoyed health over a long period of years. All authors are of one accord in the belief that the success of splenectomy depends upon a very definite diagnosis.

From the obscure symptomatic purpuras a clinical entity has emerged which in the typical case is sufficiently definite to take the name essential thrombo-cytopenic purpura or chronic purpura hemorrhagica. This condition has five very distinguishing characteristics:

1. Bleeding from the mucous surfaces, accompanied by the petechial hemorrhage.
2. Deficiency of blood platelets.
3. Greatly prolonged bleeding time.
4. Non-retractile clot formation.
5. Usually an enlargement of the spleen.

Purpura is classified by Minot and Lee as follows:

1. Purpura hemorrhagica, which may be congenital or acquired, or acute or chronic.

2. Simple symptomatic purpura, which is usually present with definite disease, such as acute infection, septicemias, spinal meningitis. It may be produced by such drugs as copaiba chloral, mercury, arsenic, quinine and diphtheria antitoxin. It also may occur along with chronic nephritis and such blood dyscrasias as leukemia, pernicious anemia and aplastic anemia. It may be differentiated from hemorrhagic purpura in that the blood platelet count is usually normal and there is no bleeding from the mucous surfaces. This type of case will get well as the accompanying disease is cured, or the toxic cause is removed.

3. Idiopathic purpura, which may occur by itself, but is much more often associated with one or more of the following conditions: Visceral manifestation or so-called Henoch's purpura, arthritis or Schœnlein's disease, commonly called purpura rheumatica, edema and erythema. Here, again, in this type of condition the blood platelet count is normal and there is rarely bleeding from any mucous surface, and complete recovery is the rule in most cases of idiopathic purpura, although sometimes chronic cases almost approach the hemorrhagic stage.

Hemorrhage from the mucous membranes is the clinical feature which distinguishes purpura hemorrhagica from other forms of purpura. Epistaxis is the most frequent form, although hemorrhage from the gums is common; bleeding likewise occurs frequently from the uterus, the gastro-intestinal and the genito-urinary tracts. Hemorrhage into the brain may cause death. Rarely does hemorrhage occur in the joints. The petechial hemorrhages may vary in size from a very fine rash up to two centimetres in size. Ecchymosis from the slightest cause is common. Application of a tourniquet will cause the fine rash to appear above the tightened area. This is a rather definite test for the condition. Naturally these hemorrhages will produce marked anemia, which is always evidenced by extreme weakness, loss of weight and pallor. The acute cases are accompanied by temperature as high as 102°. The milder cases seldom have fever. The acute cases have a tendency to become chronic, and the chronic cases have a tendency towards remission. The disease occurs at any age, although more prevalent between the ages of ten and twenty-two. The disease may be either acquired or congenital. Acquired cases are attributed to infection, focal and systemic, and to toxic causes, such as arsphenamine injections or benzol poisoning. In the acquired forms, cures will result if the cause can be discovered and removed.

Purpura hemorrhagica must be differentiated from all conditions in which simple purpura occurs as a manifestation, such as aplastic anemia, pernicious anemia, the leukemias, the acute infections, scurvy and idiopathic purpura and hemophilia. If an examination of the blood is made in every case of hemorrhage and in every case of purpura, as it should be done, there will be little difficulty in recognizing a case of purpura hemorrhagica. Just a word about hemophilia, which is often confused with chronic hemorrhagic purpura. Hemophilia is never found in females, and is rarely accompanied by purpuric spots. Further, hemophilia is characterized by a prolonged coagulation time, a normal bleeding time and a blood clot which will retract in the normal manner, while in purpura hemorrhagica the bleeding time is prolonged, the coagulation time normal, and the clot will not retract normally.

The chief pathologic feature of hemorrhagic purpura is the diminution of platelets. This fact was first observed by Denys and later by Hayem. The number of platelets vary normally from 200,000 to 400,000 to each cubic centimeter of blood, with 5,000,000 red cells

and 5,000 white cells. The tendency to hemorrhage is proportionate to the diminution in platelets. When the platelets are below 100,000, this tendency is marked. Diminution in platelets seems to be brought about in three ways:

1. By a destruction of depressed activity of the megakaryocytes, bone marrow cells from which they are formed. This condition might be produced by the effect of poisons, such as benzol or arsphenamine injections.

2. The second manner in which the platelets might be reduced is by replacement of the megakaryocytes by abnormal cells, such as in the leukemias, or in the presence of malignant tumors of the bone.

3. The third way in which platelets may be reduced is by destruction in some other part of the body. This seems to be borne out by the fact that there is a marked increase in the platelet count following splenectomy, and the sinuses of the spleen are engorged with blood platelets. "Splenectomy in hemorrhagic purpura therefore does not necessarily eliminate the underlying cause of the disease, but in removing the destructive agent it often renders the disease ineffective."—(W. J. Mayo, Surgical Clinics of North America, April, 1924, p. 774).

The prolonged bleeding time and non-retractile clot are so characteristic in purpura hemorrhagica that it may be explained on the basis of deficiency in platelets. On this basis it is easy to conceive that there is just sufficient material to clot most of the fibrinogen, but not enough to clot it rapidly—hence the prolonged bleeding time. The soft non-retractile clot can be explained by the fact there are not enough platelets present to form a strong network as a basis for the clot. The bleeding time is sometimes prolonged between one and two hours.

Purpuric eruptions cannot be explained on the basis of blood platelet deficiency, since these eruptions occur in all forms of purpura. This phenomenon is but little understood. There are indications that minute change occurs in the small blood vessels of the body.

Enlargement of the spleen is usually found in hemorrhagic purpura. The cause of this enlargement is not definitely known; however, it is a known fact that increase in the size of the spleen in typhoid fever, malaria and syphilis is an attempt to remove diseased organisms from the blood stream. When the spleen is removed in hemorrhagic purpura a marked hypertrophy is noted and the sinuses are found to be engorged by deteriorated red cells and blood platelets.

Treatment.

Acute purpura is alleviated by the transfusion of blood, which not only causes an improvement in the anemia, but also supplies blood platelets which aid in checking of hemorrhage from the mucous surfaces, and under the skin. The benefits will last only so long as the blood remains in the circulation and frequent transfusions are necessary to tide the patient over the acute stage. Careful history and thorough physical examination will often reveal the cause of chronic purpura hemorrhagica and its removal may effect a cure. After careful study in obstinate cases, splenectomy will produce brilliant cures by removing an organ which is destroying more of the vital elements of the blood, namely, the red blood cells and platelets, than it normally should.

Case Report.

Mrs. Lloyd S., age 33 years, was admitted to the hospital January 17, 1927, complaining of weakness, with bleeding from the gums, nose, and womb, and petechial hemorrhages over the entire body, with the exception of the face, hands and feet.

Family History.—Mother living and well, age 65. Father died age 55, following gall-bladder operation. One brother and five sisters living and well. Two sisters and one brother died as infants, cause of death unknown. There is no history of abnormal bleeding in the family.

Past History.—As a child patient had measles, mumps, and whooping cough. There has been no unusual illness in the patient's life except headache, which occurred almost every day until she was 22 years of age. Menstruation began at the age of 17, and has always been regular at twenty-eight day intervals. Periods lasted from five to seven days with more than the average flow. Patient was married in 1914, and has been the mother of four children—two of whom were still-born. First still-born child was attributed to the fact that the mother suffered with epidemic influenza during her pregnancy. Second still-born child

was delivered three years ago, cause unknown. The two living children are well and healthy.

Present Illness.—This can be dated back to July, 1926, when patient noticed several large, unusual bruises on her body. Very little attention was paid to these bruises. In August, there was a prolongation of menstruation, and patient felt very weak. Normal periods were experienced in September and October. In November there was a marked uterine bleeding at her regular period. This hemorrhage was so profuse that it necessitated the calling of her physician, who placed her in bed. During the latter part of November the patient's gums bled. This checked very promptly, but again the middle of December the gums and nose bled constantly. Also about this time hundreds of little petechial hemorrhages appeared.

On December 23rd, patient was admitted to the Petersburg Hospital and a diagnosis of hemorrhagic purpura was made. Her laboratory findings at this time were—hemoglobin, 21%; color index, 50; coagulation time, two minutes; reds, 2,150,000; whites, 4,800; polys., 70%; lymphs, 28%; basophils, 2%; bleeding time, 23½ minutes; platelets, 100,000; moderate poikilocytosis.

On December 24th, patient was given 500 c.c. of blood by the Unger method. There was no reaction. Patient left the hospital the next day feeling much stronger. The gums and nose bleed checked promptly, and patient was discharged to return in another week for transfusion. During this week there was a very marked menstrual bleeding.

On December 31st, patient was re-admitted to the hospital. Laboratory findings were—hemoglobin, 21%; color index, 48; coagulation time, two minutes; red cells, 2,160,000; white cells, 13,600; polys., 81%; lymphs, 16%; basophils, 2%; e. o. s., 1%; platelets, 211,000; bleeding time, 6 minutes. She was given 500 c.c. of blood by the Unger method, which was followed by a moderate chill, but no elevation of temperature.

On January 1st, patient was discharged from the hospital, feeling stronger, there being no hemorrhage from gums or nose.

On January 17th, patient was re-admitted to the hospital, bleeding from the gums and nose. There were many hemorrhages in the skin, especially on the limbs. Laboratory findings were as follows: Urinalysis, negative; hemoglobin, 20%; color index, 46; red cells, 2,170,000; white cells, 6,400; polys., 71%; lymphs, 27%; basophils, 2%; bleeding time, 18 minutes; Wassermann, negative.

The physical examination on same date was as follows: Patient is a very pale, white woman; age 33.

Pupils.—Regular and react to light and accommodation.

Teeth.—Several teeth with caries; slight pyorrhea of the lower gums.

Mouth.—Large hemorrhagic spot in roof of mouth. Gums normal in appearance.

Heart.—No murmurs; no enlargement; pulse rate is regular and of good volume, with a rate of 120. Blood pressure—systolic 110, diastolic 65.

Lungs.—No rales are heard over either lung; breath sounds are clear and both bases expand equally. The percussion note is hyperresonant.

Abdomen.—Flat and soft, with no abnormal masses.

Liver.—The lower margin of liver cannot be palpated. Has no apparent enlargement of liver on percussion.

Spleen.—The lower margin of the spleen can be palpated at level of the umbilicus.

Neurological.—Normal reflexes are present and active. No abnormal reflexes are noted.

Skin.—The entire skin of the body is mottled with petechial hemorrhages, ranging in size from the size of a dime to the size of a fifty cent piece. Some of these spots are fading. The hemorrhages are most marked on the calves of the leg. A large bruise is noted on the anterior surface of the right thigh. The patient remembers no injury at this point. There are marked imprints of rubber supporters just above the knee. There are no palpable lymph glands over the body.

January 19th.—On this date patient was first transfused with 500 c.c. of whole blood, and then, through a left rectus incision extending from the umbilicus to the ninth costal cartilage, the spleen was removed. There was only moderate hemorrhage, and patient stood operation well.

January 20th.—General condition excellent. There has been no sign of any oozing from any mucous surface, and there are no new purpuric spots. The blood findings showed—hemoglobin, 25%; red cells, 2,670,000; white cells, 21,800; blood platelets, 352,000; bleeding time, 5 minutes.

January 24th.—General condition excellent. Hemoglobin, 26%; red cells, 2,710,000; blood platelets, 552,000.

January 27th.—Wound dressed, stitches removed, wound clean; patient is making an easy recovery with the exception of temperature of 101° in the afternoons. There has been no unusual incident in her convalescence.

January 29th.—Patient complained of pain behind right knee. Examination revealed a tender fluctuating mass, which was opened and drained. Cause of this abscess formation was unknown.

February 2nd.—Temperature continued to run 100½°. Wound back of right knee was still draining pus.

February 5th.—Seventeen days after operation patient was discharged in good general condition. The wound behind her right knee was still draining slightly. Her temperature ranged up to 99½° in the afternoon. Patient said she felt better than for years.

February 21st.—Patient was up and feeling well. She had no tendency to abnormal bleeding. She had been through her menstrual period with less bleeding than usual. Her blood count on this date was as follows: Red cells, 3,460,000; white cells, 17,000; hemoglobin, 45%; polys., 61%; lymphs, 36%; e. o. s., 1%; trans., 2%; urinalysis, negative. Her temperature still ranged to 99½° in the afternoon. Since her operation she has gained 25% in hemoglobin and nearly 1,500,000 in red cells in a period of three weeks. Her bleeding time has dropped from 15 to 4 minutes, and the platelet count has increased from 100,000 to 500,000.

TWINS.

By J. LEWIS RIGGLES, M. D., F. A. C. S., Washington, D. C.
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Hydramnios or polyhydramnios is usually very marked in multiple pregnancies and the diagnosis is not made until the first baby is born. This excessive fluid should always make us suspicious of either a multiple pregnancy or of a monstrosity. In sub-acute cases developing around the 8th month the abdomen sometimes becomes enormous, making sitting erect impossible and the dyspnea is so great the patient can not get in any comfortable position and suffocation seems imminent.

One of my cases was that of a doctor's wife who was brought to my office from out of the city in an automobile. She was in a state of extreme shock and exhaustion from dyspnea and the greatly distended abdomen. I immediately transferred her to Columbia Hospital. On examination I found the membranes protruding through a partially dilated cervix, which I ruptured, allowing the escape of two gallons of amniotic fluid. The baby, an undeveloped achondroplastic dwarf, was born dead one-half hour later—8th month of gestation.

Twin pregnancies, when diagnosed before labor, should not be looked upon with fear or anxiety because complications are quite unusual; most of them are premature and of small size—from 3 to 6 pounds in 80 per cent of the cases. Many do not survive and, although the presentation may be in any position, they are delivered spontaneously.

On the other hand, occasionally they go to term, which should give concern as to the management of labor.

The large over-stretched uterus has not much endurance and the labors are usually very slow and inertia is a consequence, requiring interference on the part of the obstetrician.

If the patient should go to term and her abdomen is very large, then we must not forget the following possible complication, viz.: Premature rupture of the membranes with prolapse of the cord; malposition of either twin; toxemia and eclampsia; premature separation of placenta, or collapse of the mother from exhaustion. Also, after delivery of twins the danger of hemorrhage is great,—even before delivery of the placenta. This emergency should be promplty dealt with by Crede's expression, not waiting for the uterus to rise. Manual extraction of the placenta may be necessary, but I am strongly convinced that this is dangerous, because the peripheral shock following this procedure is most alarming. Although I have many times manually extracted the retained placenta for different reasons, it has occasionally been followed by peripheral and general shock, at which time the patient is in collapse, the radial pulse cannot be felt, and the only signs of life are the slow beating of the mother's heart. Stimulation and quiet, however, usually bring good results. Constant watching and large doses of pituitrin are necessary to insure contraction and retraction of a feeble uterine musculature.

The X-ray diagnosis is most important but

not always necessary. If the hydramnios is not great, diagnosis of the position of at least the first twin should be made without difficulty, and the second is usually diagnosed and delivered when the presenting part enters the cervix,—and only then.

I did not make the diagnosis in one of my own cases which went to term because of polyhydramnios. No part of either twin could be felt through the tense abdomen. Vaginally, a breech presented, after delivery of which I was confronted with a prolapsed arm. This was replaced, a foot drawn down and version and extraction was easily accomplished. Both babies lived. Weight—6 pounds and 2 ounces (male) and 5 pounds and 10 ounces (female). The mother's recovery was uneventful. The babies were nursed every four hours until the eighth month.

An unprecedented experience at Columbia Hospital was that during 1927 there were born 14 sets of twins.

Their weights were as follows:

No. 1. 1st—4 lbs., 6 ozs. 2nd—4 lbs., 4 ozs.
No. 2. 1st—3 lbs., 13 ozs. 2nd,—3 lbs., 13 ozs.
No. 3. 1st—7 lbs., 10 ozs. 2nd—7 lbs., 4 ozs.
No. 4. 1st—5 lbs., 3 ozs. 2nd—5 lbs., 4 ozs.
No. 5. 1st—13 ozs. 2nd—14 ozs.
No. 6. 1st—5 lbs. 2nd—6 lbs., 10 ozs.
No. 7. 1st—5 lbs. 2nd—5 lbs., 8 ozs.
No. 8. 1st—4 lbs., 2½ ozs. 2nd—4 lbs., 6 ozs.
No. 9. 1st—7 lbs., 5 ozs. 2nd—6 lbs., 8 ozs.
No. 10. 1st—4 lbs., 6 ozs. 2nd—2 lbs., 14 ozs.
No. 11. 1st—4 lbs., 9 ozs. 2nd—5 lbs., 12 ozs.
No. 12. 1st—3 lbs., 14 ozs. 2nd—4 lbs., 3 ozs.
No. 13. 1st—6 lbs. 2nd—6 lbs., 14 ozs.
No. 14. 1st—4 lbs. 2nd—4 lbs., 8 ozs.

It is interesting to note that in the prematures the second twin was heavier, whereas in the cases that were viable and went to term or near term the first was the larger.

The case I wish to report was that of a multipara I, age 22, Mexican of the higher class. She came to me in the early months of pregnancy. Her calculated time for confinement was Dec. 27, 1927. She was delivered Dec. 22, 1927. Examination up to the eighth month revealed nothing abnormal, when there was noticed a marked increase in the size of the abdomen. I discovered the twin pregnancy at that time and so informed her. There was not a large amount of hydramnios and you could easily palpate a head over the bladder region and another under the liver. Two widely separated heart sounds were heard,—one in right lower quadrant, the other in left upper quadrant. Repeated examinations and counting of the two hearts were made. We found them always to be synchronous—130 per minute. She began her labor at 10 P. M., Dec. 21, 1927, with weak and infrequent pains which continued throughout the night. Labor was very slow and pains were at no time hard or bearing down in character. During the next morning they became farther apart and finally stopped. Besides the inertia she went into collapse, with pulse 110, so that interference was necessary.

Vaginal examination revealed a fairly large head in ROP position. Membranes ruptured. I rotated to ROA and delivered with forceps. Live male baby, wt. 7 lbs., 5 ozs. I immediately examined for the presenting part of the second twin. After rupturing its sack, I found vertex in LOP position. This was rotated to LOA and delivered with little difficulty with forceps. Live male baby, wt. 6 lbs., 8 oz. Total weight of babies 13 lbs., 13 ozs. The two placentae, which were joined, were immediately expressed by Crede's method. Patient had no post-partum hemorrhage, and made an uneventful recovery.

There is nothing new or unusual in this little review, but it might be interesting to those who have not had twin babies near or at term.

1621 *Connecticut Avenue.*

DENTITION—IS IT A PATHOLOGICAL PROCESS?*

By SAMUEL NEWMAN, M. D., Danville, Va.

A consideration of the history of medical thought with regard to the physiological process of dentition would present the story of the evolution of modern medicine, or at least as it relates to the struggle of scientific pediatrics to rid itself of the grossest medical absurdities.

The term dentition refers only to that stage of development when the tooth is penetrating the superficial tissues of the gum; it commences about the sixth month and it is finished by the end of the second year at which time the second molars erupt. The permanent teeth erupt between the sixth and seventeenth or the twenty-first year.

For various mistaken reasons dentition was held accountable, directly or indirectly, for almost all the ills of infancy. Even to this very

*Read by invitation before the Danville Dental Society, November 21, 1927.

day the crude superstitions clustered about dentition are tolerated, or even entertained, by many members of the medical profession.

Chapters on alleged disorders of dentition are to be found in the early medical writings. The methods of treatment of this supposedly difficult process are absurd. During the earlier centuries, A. D., the application of brains of hares was recommended. Heated discussions are to be found on the question whether the brains should be roasted or boiled. The physician of Julius Caesar recommended the use of cyprus butter and lily oil instead of the brains of the hare. The efficacy of all sorts of charms, ranging from necklaces of amber beads to mystic plants and animals is believed in by considerable elements of our present generation. In practice it is not a rare experience to see a mole's foot strung about an infant's neck as a remedy for difficult dentition.

The attitude on this matter of dentition among pediatricians is very decided. We find the erroneous notions about dentition a great obstacle to scientific practice among children. Not only are common manifestations of infantile derangements, such as fever, restlessness, peevishnes, diarrheas, and colds attributed to teething, but even such serious conditions as otitis, convulsions, infectious diarrheas, pneumonia, diphtheria and other major disorders are passed up by an ignorant laity as *teething*. I have on record a case of cerebrospinal meningitis that was complacently regarded by all attendants as a derangement due to teething.

Before referring to my own observations on this question of teething, which has interested me very keenly from the first day I entered upon the study and practice of pediatrics, I shall cite opinions of a few leading authorities.

In an article on dentition, by John Dorning,[1] the following statements are to be found:

"Very often trifling disorders that are viewed as evidences of difficult dentition are directly or indirectly dependent upon rachitis. This is one of the most common of children's diseases, and, frequently, a mild form of the affection passed unrecognized because its symptoms have received a wrong interpretation. * * * Most of the earaches in children are dependent upon acute otitis, and many an otitis is neglected until the organ of hearing is irreparably damaged, because 'the doctor said the ear would stop running when he (the child) would cut all its teeth.' "

I might say here that, though the above had been written nearly forty years ago, one often meets with cases of otorrhea which are attributed by parents as due to dentition. The lay superstition of today merely reflects medical thought of yesterday.

I am often besieged by requests from mothers to lance the baby's gums. That this obsolete custom is still prevalent in certain localities is a sad comment on what lay beliefs and professional conscience will stand for. I shall quote further from the same author:

"It is not many years since the gum-lancet was considered the catholicon for nearly all infantile maladies. At the present day it has fallen into well-merited disrepute. As J. Lewis Smith remarks, it is used more by the ignorant practitioner, who is deficient in the ability to diagnosticate obscure diseases, than by one of intelligence who can discern more clearly the true pathological state. Gum-lancing is not objectionable because of pain, the possibility of severe hemorrhage, injury of the tooth, or any difficulty attending the operation, but because it is an absolutely useless procedure so far as it affects the eruption of a tooth. There is no tension of the overlying gum; for an incision, whether linear, crescentric, or crucial, does not gape. * * * Every one has heard of cases where a cutaneous eruption disappeared, convulsions ceased, diarrhea stopped, fever abated, and quiet slumber ensued after the gums had been lanced. But it is more than likely that in every instance it was a pure coincidence, or the result of the hemorrhage (a blood letting), or of imagination on the part of those interested. Every intelligent observer knows that infantile derangements frequently get well spontaneously,—good ground for being skeptical about many of our vaunted therapeutic measures."

The above citations were written by an author nearly forty years ago. I shall now refer to a modern author, John Lovett Morse. Morse,[2] in discussing disturbances of dentition, states the following:

"In spite of all that has been said and written regarding the infrequency of disturbances in infancy as the result of dentition, the tendency of the laity and also of many physicians, who ought to know better, is still to attribute to dentition all sorts of symptoms and diseases which have no relation to dentition, except that they occur at the same time. It is evident how foolish this is, when it is remembered

that dentition is a process which begins *in utero* and is not completed until the eruption of the 'wisdom teeth', which seldom occurs before the seventeenth year. Nevertheless, babies and children are well most of the time. No one attributes miscarriages and congenital deformities or repeated colds and indigestion in late childhood to dentition. It would seem as reasonable to do this as to attribute many of the ills of infancy to it. The diseases and disturbances which are laid to dentition are almost invariably due to something else. * * *"

Finkelstein,[3] perhaps the keenest pediatric clinician of the age, on the subject of difficult dentition expresses himself as follows:

"The process of dentition takes place as a physiological phenomenon without any disturbance. Nevertheless, since ancient times has the teaching concerning difficult teething played a great role in all nurseries. * * * It may be admitted that, particularly at the eruption of the molars, there may be restlessness, sleeplessness, salivation and erythema of the buccal mucous membrane. Even a slight degree of temperature may manifest itself. However, these manifestations are to be viewed as accidental occurrences resulting from other ailments which may cause a slowing down of the process of dentition. * * * The most that can be granted is that in rachitic and spasmophilic children dentition may be the exciting moment of the underlying pathological tendency. * * * At all events, any treatment, including the lancing of the gum, is absolutely uncalled for."

Fischl,[4] Professor of Pediatrics at the German University of Prague, in his contribution on this subject, makes the following statements:

"I consider it as one of the most happy advances of modern pediatrics that the chapter on disturbances of dentition, which used to occupy such a prominent place in the older textbooks has disappeared from the new ones. * * * The knowledge of the simple anatomical fact that the process of dentition extends over months and years would seem sufficient to cure one of the mistaken notion. * * * If one were to take the trouble to follow up the various stages of dentition in the normal child, he would not find a shadow of fact to justify the assumption that the teeth are in the least way responsible for any disturbance."

Jacobi,[5] the father of American pediatrics, states:

"Dentition is a physiological process; before a tooth protrudes, the gums above it are slowly absorbed so as to show a slight depression, with no hyperemia. * * * The only perceptible symptom is the eagerness of the baby to bite. Increased salivation has nothing to do with dentition, but with the increased function of the salivary glands, which, like the growth of the teeth, of the head and of the brain, is the result of the physiological hyperemia of that part of the body connected with the large size of the carotid arteries. * * * Diarrhea is not a result of the normal teething process. * * * Lancing the gums, which, with calomel, used to be the every-day treatment of infants at the time of teething has lost most of its charms."

In my own practice I take great pains to gather information on the question of difficult dentition. Mothers are requested to inform me of the exact day of the eruption of a tooth and careful inquiry is made concerning any attending ailment. I have on record hundreds of mothers who could testify with pride that their infants erupted all their teeth without any disturbance whatsoever. I have also a considerable number of cases where complaints were reported attending the eruption of the teeth. In almost all of these cases, where examination of the infant was permitted, a palpable cause for the disturbance could be found, such as improper feedings, grippe, nasopharyngitis, otitis, bronchitis, the common cold, etc. In almost all of these cases the gums were of normal color and no swelling could be discerned. Once, however, I had the occasion to use the gum-lancet. The gum over an erupting molar was swollen, fluctuating and filled upon incision, with a few drops of thick, black blood. This condition probably followed the attempt at "rubbing the gum through." This procedure (rubbing the gum through) is irrational for the simple reason that the eruption of a tooth does not proceed by a process of *cutting* through the gum. The very term "eruption" is a misnomer. The gums are composed of a dense fibrous tissue, closely connected to the periosteum of the alveolar processes. They are covered by a smooth vascular mucous membrane, which is remarkable for its limited sensibility. When the teeth are ready to erupt, the bone between them and the gum is absorbed (Gray's Anatomy). Ulceration of

the gum over a tooth I observe now and then, though rarely, which might have been due to the impingement of a sharp corner of a corresponding tooth that has erupted in the opposite jaw. An occasional case of gingivitis or stomatitis may be seen associated with dentition. However, it occurs mostly among infants of the lower social strata,—at least my experience is pretty definite on this point. The infants are debilitated, bottle-fed, poorly cared for. The nursing-nipples, teething-rings, filthy sugar-teats, thumb-sucking and irritating medicines and general unhygienic surroundings would amply account for the occurrence of these pathological mouth conditions—and not in the least related to dentition. From a dental standpoint, it would seem unreasonable to presume that the absorption of the overlying gum tissue causes pain when the highly sensitive nerve-filament that forms a part of the pulp of a milk-tooth becomes obliterated together with the substance of the fang, without pain or inflammation, to make way for the permanent tooth.

BIBLIOGRAPHY.

1. Dorning, John: Cyclopedia of the Diseases of Children: Keating, Vol. 1, Lippincott Co., 1891, p. 350.
2. Morse, John Lovett: Clinical Pediatries. W. B. Saunders Co., 1926, p. 249.
3. Finkelstein, H.: Lehrbuch der Sauglingskrankheiten, 2nd ed., Berlin, 1921, p. 646.
4. Fischl, R.: Pfaundler und Schlossmann, Vol. III, Leipzig, 1924, p. 36.
5. Jacobi, A.: Therapeutics of Infancy and Childhood, Lippincott Co., 1903, p. 315.

UNDULANT (MALTA) FEVER.*

By ADAH CORPENING, Richmond, Va.

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Undulant fever has been known since 1887. It was originally called Malta fever from the fact that it was prevalent on the Island of Malta, though it also occurred in other sections along the shores of the Mediterranean. The microorganism causing undulant fever has been known by various names, but is now commonly called Brucella melitensis.

The disease was found to be spread by goats' milk and was at first thought to be spread in no other way. In recent years, however, it has been found that this disease is not confined to any one locality, but is quite general in its distribution. It has also been found that goats' milk is not the sole means of spread, but that cows' milk also serves as a vehicle of transmission. The explanation of this was furnished by Alice Evans,[1] of the Hygienic Laboratory, who has proved in recent years the virtual identity of the organism of contagious abortion in cattle with Brucella melitensis of Malta fever.

ORGANISM

The trend of present day opinion is to regard the two organisms Brucella melitensis and Bacillus abortus, if not absolutely identical, as at any rate so closely related as to place them under a single new genus "Brucella." Brucella melitensis was isolated from infected goats or cases contracted from the drinking of goats' milk, while the Bacillus abortus variety was isolated from cattle or cases of undulant fever in man.

CHARACTERISTICS OF THE DISEASE

Lake[2] states that Malta fever may occur in every degree from a mild ambulant type, which may easily escape detection, to very acute cases with an abrupt onset and which may persist in chronic form for from many months to several years.

Bevan[3] states that not infrequently cases are at first mistaken for malaria or typhoid until blood examinations and agglutination tests reveal the true nature of the disease. The chief symptoms appear to be pyrexia, headache, anaemia, swollen spleen and liver, and pain in the joints. Neuritis and sciatica and occasionally orchitis follow.

Bruce[4] has defined Malta fever as "a disease of long duration, characterized clinically by continued fever, profuse perspiration, constipation, frequent relapses, rheumatic neuralgic pains, swelling of joints or orchitis; bacteriologically by the presence in the blood and organs of Brucella melitensis, or Bacillus abortus."

Orr and Huddleson[5] state of the sixteen cases studied in Michigan only five were tentatively diagnosed as undulant fever by the attending physicians, and this happened only after much publicity had been given to the subject.

OCCURRENCE

In 1905 Craig[6] reported a case of Malta fever which was the first on record originating in the United States. The patient was a hospital nurse. There was no case of Malta fever

*Read before the Health Officers section of the Virginia Public Health Association in Suffolk, January 5, 1928.

at the time of her attack, but she had previously been attending sick soldiers in a hospital in Washington, D. C.

In 1920 there were a number of cases of undulant fever at Alexandria, Virginia. At that time contagious abortion was known to exist among cattle on the farms in the surrounding country. At this time the milk supply of Alexandria was not under municipal control. Very likely a considerable portion of the Alexandria patients were using raw milk containing the abortus variety of Brucella melitensis. I have been unable to find any accurate record of this outbreak.

In the summer of 1922 there occurred in Phoenix, Arizona, the first real epidemic of Malta fever that has so far been recorded in the United States. There were thirty-seven patients giving positive evidence of Malta fever. All of the patients except five had used goats' milk previous to the epidemic. Brucella melitensis was isolated in pure culture from the blood of some of these patients.

Orr and Huddleson[5] report sixteen cases investigated in Michigan since June, 1926. In six of these cases Bacillus abortus was isolated. The remaining ten cases not only gave typical clinical symptoms of undulant fever but also gave specific agglutination with Bacillus abortus in dilutions ranging from 1 to 640 to 1 to 10,000. All of these cases had used raw milk in varying quantities.

With approximately one-third of the cattle in Michigan infected with contagious abortion and a large part of the milk unpasteurized, it is hard to account for the small number of human cases of the infection, thus it would appear that the susceptibility of man to the abortus variety of Brucella melitensis must be relatively slight.

During 1927 Dr. John Powell Williams reported two cases of undulant fever from hospitals in Richmond, Virginia. One case at Sheltering Arms Hospital, from Howardsville, Virginia, and the other case at St. Luke's Hospital, from Brodnax, Virginia. Pure cultures of Bacillus abortus were isolated from both of these cases by Dr. Shaw of the Medical College of Virginia.

Laboratory Methods of Diagnosis

The causative organisms have been isolated in pure culture from the blood, urine, and amniotic fluid of goats and cattle. In man the organism has been isolated from the blood of patients with undulant fever. This is sometimes very difficult to do and, in some cases giving a typical history, the organism has never been isolated. How long the organism will remain in the blood stream we do not know. We do know, however, that repeated blood cultures sometimes give positive results following a number of negatives. Why this is so is not known.

For best results it has been suggested that blood cultures be taken in the afternoon and during a rising temperature. It is necessary to have a much larger quantity of blood than is ordinarily used for culture work, not less than 20 c.c.

The laboratory method that is used most extensively is the agglutination test. However, this cannot always be relied upon as agglutination can often be obtained in low dilutions with normal serum, and some typical cases of undulant fever never show agglutination in dilutions above 1 to 5. Opinions vary widely as to the titre of agglutination that can be relied upon as of diagnostic value. A positive reaction in low dilutions may have four possible explanations: (1) The reaction may not be specific; (2) the agglutinins may have been acquired in a secondary manner by absorption in the intestines from the agglutinins present in the milk that had been ingested; (3) the agglutinins may have been produced as the result of an infection sometime in the past; (4) they may indicate a present infection. It may be that one explanation would apply in one case and another explanation in another case. Consequently, the degree of agglutination necessary to justify a diagnosis depends largely upon the history of the case.

It must be borne in mind that the only sure diagnosis is a positive blood culture.

We can no longer think of undulant fever as a disease of the Mediterranean countries only, caused by the drinking of goats' milk, but must keep in mind that it is an infection not uncommon even in our own state; that the causative agent is the same organism that causes contagious abortion in cattle, and that raw milk from cows infected with contagious abortion is a source of danger to persons susceptible to the abortus variety of Brucella melitensis.

Bibliography.

1. Evans, Alice C.: Malta Fever. Reprint No. 906., *Public Health Reports*, March 14, 1924.
2. Lake, G. C.: Malta Fever, *Jour. Amer. Med. Assn.*, Vol. 89, No. 19, November 5, 1927.

3. Bevan, Mr. L. E. W.—Infective Abortion in Cattle in Relation to Malta Fever. *Proc. Roy. Soc. of Med.*, Vol. XIX, No. 1, 8-13, November, 1925.
4. Bruce, Sir David: Undulant Fever. Modern Medicine, by Osler and McRae, 1913, Vol. I, p. 664.
5. Orr, Paul F. and Huddleson, I. F.: An Epidemiological Study of Undulant Fever in Michigan, *Amer. Jour. Pub. Health*, Vol. XVII, No. 12, December, 1927.
6. Craig, C. F.: The Symptomatology and Diagnosis of Malta Fever, with the Report of Additional Cases. *International Clinics*, Phila. and London, 15th Sec., 4:89-115, 1923.

THE TREATMENT OF GALL-BLADDER DISEASE.*

By BEVERLEY F. ECKLES, M. D., Richmond, Va.

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The treatment of gall-bladder disease, although chiefly a surgical problem, is not exclusively so. The happiest results depend upon a close co-operation between the internist and the surgical consultant.

When the question of diagnosis has been satisfactorily settled, the case usually becomes one of gall-stones, of cholecystitis, or of a combination of the two.

Although "silent" gall-stones have been noted, the statement has been made that there are no "innocent" gall-stones,—their mere presence being sufficient cause for their removal.

Attacks of gall-stone colic tend to subside, but they also have a strong tendency to recur, the subsequent attacks coming at shorter intervals and being more severe. The same holds true for cholecystitis. The chances for spontaneous recovery from a given attack of either gall-stones or cholecystitis will usually be good, but the relief is only temporary and the recovery only relative. Between attacks the patient has ordinarily more or less indigestion, which may become constant and annoying, even if not disabling or dangerous.

Because of these considerations, the treatment of gall-stones and cholecystitis is mainly a surgical question. For convenience, this treatment may be discussed under its pre-operative, operative and post-operative phases.

Pre-operative Treatment.—It is best, when possible, to perform the necessary operation in an interval between attacks. The patient is better able to withstand the ordeal, and the local conditions are more favorable. Not infrequently, pre-operative treatment is obligatory,—for example, where there is advanced derangement of the circulatory organs or of the kidneys, or where there is an associated diabetes. In such cases, the control of the accompanying conditions is of first importance and governs the outcome of the case. Marked and progressive jaundice demands treatment prior to operation, because of its interference with the proper clotting power of the blood and the consequent increased tendency to hemorrhage. It is best controlled by giving large quantities of fluid by mouth and by the Murphy drip, and by the oral administration of fifteen grains of calcium lactate three times daily for two or three days prior to operation. Sometimes it is necessary to give the chloride of calcium intravenously instead of the lactate by mouth. Where contra-indications do not exist, saline laxatives daily are beneficial.

The usual regimen preparatory to operation is: Rest in bed; morphine enough to relieve pain and secure relaxation, and liquid diet, in the acute stage. Where nausea and vomiting will not permit sufficient intake of liquids by mouth, fluids or nutritive enemata are given by bowel. Laxatives are often inadvisable, and in such cases cleansing enemata are employed. The judicious use of an ice-cap on the abdomen is permissible, but its prolonged application may be harmful. With the gradual disappearance of the acute symptoms, the diet is increased and the morphine is gradually withdrawn. Under this plan, most cases can be safely and successfully carried through the acute stage.

Occasionally, and particularly in cases of cholecystitis associated with gall-stones, the attack is steadily progressive—empyema of the gall-bladder. The pain becomes more intense; the temperature, pulse, and leucocyte count rise steadily, and the local tenderness and rigidity become more marked. In these cases a timely operation will forestall perforation of the gall-bladder with subsequent peritonitis and a prolonged, dangerous illness.

Operative Treatment.—The operative treatment of gall-bladder disease has undergone a marked change within the past few years. At first, drainage of the gall-bladder, after removing any stones present, was the rule, and cholecystectomy was the exception. A high percentage of recurrences and unsatisfactory results, however, gradually led to the general

*Read as part of a symposium before the Staff of the McGuire Clinic, Fall, 1927.

adoption of the more radical removal of the gall-bladder as the operation of choice, reserving cholecystostomy for those cases in which prolonged drainage was essential or in which cholecystectomy was either too dangerous or impossible. Frequently the gall-bladder which most needs to come out has to be left in, because of insurmountable obstacles to its removal, either in the local conditions present, or in the patient's general state.

As a rule, then, where for good reason the gall-bladder cannot be removed, or where prolonged drainage is desirable, as in cases with an associated chronic pancreatitis, cholecystostomy is the operation of choice—in all other cases. cholecystectomy.

Where a stone has become lodged in the common duct, the duct is opened, the stone is removed and direct drainage of the duct is obtained in addition to the operation upon the gall-bladder.

The weight of surgical opinion strongly favors some form of drainage following cholecystectomy.

Sometimes, although the history and examinations have definitely implicated the gall-bladder, operation discloses one that appears almost or quite normal. Frequently removal of such an apparently innocent gall-bladder is followed by most gratifying disappearance of symptoms. However, the principle laid down by Judd in 1923 holds true in the majority of cases, namely, that the likelihood of improvement or cure following gall-bladder operations is in direct proportion to the degree of gall-bladder pathology found at operation.

Post-Operative Treatment.—Convalescence from cholecystectomy is usually more rapid than from cholecystostomy. This is in part due to the fact that cholecystostomy is done on the graver risks and on those in whom prolonged gall-bladder disease has produced such secondary changes as chronic pancreatitis and metabolic disturbances.

In the post-operative management, as in the preparation for operation, the internist renders invaluable service. This is especially true in the cases complicated by circulatory or renal disease, diabetes or other constitutional conditions.

For the first few days after operation the necessities are quiet, rest, alleviation of pain and the maintenance of body fluids. At the end of twenty-four hours, if nausea allows, liquid diet is begun. In three or four days soft diet is given, and by the end of a week a fairly liberal diet is prescribed.

In cholecystectomy the drain is usually out at the end of a week or ten days, but in cholecystostomy it is rarely removed before the end of the second week.

The stitches are removed on the ninth or tenth post-operative day, and in most of the uncomplicated cases patients are propped up in bed in from three to five weeks after operation.

During this time any tendency to hypo- or hyper-acidity is corrected by appropriate dietary and medicinal treatment, and general tonic and hygienic measures have been employed. At the same time any complicating conditions have been righted or at least controlled.

By the end of from four to six weeks, the patient is ready to be discharged from the hospital, and to receive instructions for his post-hospital convalescence.

FIELD TRAINING OF COUNTY HEALTH PERSONNEL.*

By CHARLES N. LEACH, M. D., New York, N. Y.

Rockefeller Foundation.

The development of a county health service, demanding the full time of its personnel, is a comparatively new idea in the rural sections of the United States. There is no doubt that the physician's greatest field of usefulness to the public as a whole is to be found in the realm of preventive medicine. With the development of this special branch the family physician is finding his practice dealing more and more with the prevention of disease. If he wishes to accord his patients the service that will render the greatest return he is going to be called upon to practice prevention.

Since 1914 the full-time county health unit idea has been put to the test and, as subsequent developments have adequately demonstrated, the idea has passed the experimental stage. The trained health officer, sanitary inspector and nurse have replaced the police officer in health work as the trend of public health procedure has gradually shifted. Operations dealing with environment have been extended to include preventive treatment and education of

*Read by invitation before the Virginia Public Health Association, January, 1928.

the group and the individual. The education of the group and the individual in the prevention of disease is one of the most important factors in the new program. For its proper fulfillment there is a demand for personnel properly qualified as to education, practical training, tact and common sense. During the past ten years public health activity in the United States has shown remarkable development. The demand for health officers and nurses has greatly exceeded the supply. It has been pointed out by the medical profession, sanitarians and economists that there is a decided inadequacy of personnel and financial support of official health agencies.

The Alabama legislative body has recently increased its appropriation for health work to such an extent that it is now planned to establish a full-time health department in every county in the state regardless of population or economic status. To meet the requirements for trained personnel in connection with this program of expansion, the state health officer is now organizing a training station as a function of one of his county departments, the county health officer to act as director of the station.

Slight emphasis is placed on the teaching of preventive medicine in the majority of our medical schools in the United States, and the recent graduate knows little of the practical application of the subject. Vanderbilt University Medical School offers one of the notable exceptions. At this institution a very comprehensive course in preventive medicine is offered. This course gives the student a real insight into the application of the principles of preventive medicine with the aid of bedside clinical instruction and field work. The teachers are men who have had an extensive experience in public health administration.

We cannot look to the schools of public health for our county health officers. These post-graduate institutions are turning out men, as a rule, who are highly specialized in one branch of the subject and consequently are in demand for administrative positions in state health departments, research institutions and as teachers. The lack of opportunity for obtaining special training in public health administration and the absence of appreciation of the value of such training on the part of our governing bodies is reflected in a survey of ninety-nine cities in the United States. Of these ninety-nine cities only seven had health officers specially trained in public health administration. It is quite evident that any physician qualified for practice is not necessarily capable of serving as a county health officer, giving only a part of his time to official duties. It is desirable that this medical training should be supplemented by theoretical and practical instruction in public health work.

Five years ago the International Health Board established a training station in Covington County, Alabama, which served as a place of appraisal of prospective regular staff members to ascertain their qualifications for home and foreign service. Twenty-nine regular Rockefeller Foundation staff members have passed through this preliminary training. The value of this system of appraisal and intensive field training soon became apparent to several state health officers and at their request their newly appointed men were offered the facilities of the station. It has been the aim of those responsible for the development of the training station to emphasize practical feld instruction and to stimulate an interest in rural health work. Close association with those in training has also given an opportunity to judge of their ability and actual interest in the work.

For the successful accomplishment of the training program an elaborate organization is unnecessary. A well-organized county health unit, with a competent staff, offering a diversity of public health problems fulfills the requirements for intensive field training. A state with fifteen or twenty units in operation and a prospect of organizing new units could well afford to maintain such a station. The expense of operation would add little to the normal budget of a county health unit. The returns in the way of increased efficiency and tenure of office would more than justify the small additional expense.

During the past five years 283 physicians have enrolled at the three training stations. Of those training at the Alabama station 13.6 per cent have failed to receive the approval of the director. At the Mississippi station 12.8 per cent were not recommended for service in the field of public health. The elimination of this group of failures has resulted in a financial saving to the official health agencies and perhaps the salvation of some of their county units. A disinterested incompetent health officer can very easily bring about dissatisfaction

which might result in discontinuing the work. The most common factors giving rise to unfavorable reports on these men were lack of tact and interest. If I were asked to specify the most important qualities essential to the success of a county health officer I would unhesitatingly say tact, common sense and judgment.

Medical candidates for training can usually be placed in four general classes: (1) the recent graduate who is interested only in a salaried position in order to save sufficient money to establish himself in practice; (2) the physician who has spent several unsuccessful years in practice and is anxious to make a change; (3) the health officer who has been a product of the school of hard experience, having had no training in the field of public health before attempting to direct a unit; and (4) the young graduate in medicine who has had some instruction in preventive medicine under an inspiring teacher and has a real interest in the work. Fortunately relatively few of the candidates have been men belonging to the first two groups.

The period of training has varied from two weeks to four months. In some few instances it has been impossible for the condidate to spend more than two or three weeks in training and in those cases an appraisal of the man was all that could be hoped for. It is desirable where possible to give the man two and one-half to three months at the station. During this period no didactic work is attempted, the time being devoted to actual participation in the work of a county unit. Conferences are conducted by the directors of the various bureaus of the central administration and occasionally a visiting health official is asked to address those in training. Demonstrations are given in the methods of record keeping, graphic representation of results, sanitary surveys and the actual operation of each bureau of a state health department. A few days are spent in the field with the health nurse and sanitary inspector. This gives the candidate some idea of the interrelation of the work of the personnel of a health unit.

As a result of the increased demand for training it was found necessary, about a year ago to establish a second station. Darke County, Ohio, was selected as a favorable site and by a co-operative agreement between the local board of health, the State Department of Health and the Rockefeller Foundation the facilities of the Darke County Health Department have been made available for training or for observation. For observation purposes the health department illustrates an attempt to meet the required health work of a community of approximately 42,000 with the staff and facilities possible in a budget of approximately fifty cents per capita per year. This station affords the potential health officer an opportunity to carry out health work under supervision, to familiarize himself with the technique of the various services and with the innumerable details which are involved in such work. He learns this not by systematic instruction, for none is offered, but by actual participation in the work. Every detail of the work is open to him, and every opportunity is given him to gain the desired experience. He is thrown upon his own initiative to a large extent, and he learns much or little as he may choose. The Ohio station offers practical training in connection with county health administration and organization, budgets and budget making, the keeping of records, preparation of reports, the handling of communicable disease, graphs and graph making, epidemiological procedure, making sanitary surveys, field map making, health laws, the control of nuisances, inspection of dairies, the inspection of food handling establishments, inspection of schools, the examination of school children and all the detailed field work and record keeping of public health nursing.

Immediately following the inundation in the Mississippi Valley attention was focused on the prevention of epidemics in connection with relief measures. Those counties in the overflow area where organized full time health work had been inaugurated previously to the flood were able to meet the emergency in a much more economical and satisfactory manner than was the case where emergency organizations had to be set up by the Red Cross.

At a joint meeting of representatives of the United States Public Health Service, the American Red Cross, the Rockefeller Foundation, and state health officers from the states affected by the flood, it was decided to inaugurate an organized co-operative program for the promotion of full time county health units in the flood area. It was found that ninety-nine counties in seven states would be included in

such a program.[1] This called for ninety-nine health officers, nurses and sanitary inspectors. In order to meet the demands for short intensive training peculiar to flood conditions a training station was established at Indianola, Mississippi. The station also performed the important function of appraising the material and weeding out the undesirable. The field training offered was much the same as that given in Alabama and Ohio and for the first time an opportunity was afforded for the training of nurses and sanitary inspectors. The Ohio station is now arranging to extend its program to include nurses and sanitary inspectors.

From the time the Station in Mississippi was established—July 8, 1927—to the middle of December, 173 physicians, nurses and sanitary inspectors enrolled at the station. They averaged a training period of 31.5 days each. They came from all sections of the United States and in a few instances from Canada.

The total number of physicians, nurses and sanitary inspectors reporting for training to the three stations during the past five years has been 448—283 physicians, 80 nurses and 75 sanitary inspectors. In addition to this number ten Harvard medical students have been given an intensive field training, receiving credit towards graduation for the work completed at the station.

Of the group of 120 physicians training at the Alabama and Mississippi stations, 16, or 13.3 per cent, failed to satisfy the requirements and were not recommended for positions. Two nurses in a group of 62, or 3.2 per cent, were no recommended, and 5 inspectors of a group of 72, 6.9 per cent, were advised to take up other work. The fact that the training of a nurse more nearly approaches the requirements of the public health nurse probably accounts for the low percentage of failures among this group; while the average physician reporting for training had little conception of the character of work required of a public health officer.

It is interesting to note that the first two physicians trained in 1922 are still engaged in the field of public health. In 1923 six health officers were trained and five are still following public health work. Among a group of fourteen trained in 1925, one has taken up other work; and five out of a group of seventeen trained in 1927 have gone into other fields. Eighty-eight per cent of this group of forty-five men whose careers we have been able to follow are still engaged in the field of preventive medicine.

An attempt was made to grade a group of sixty-nine persons who received training, dividing them into groups of "good," "fair" and "poor." The failures were included in the last group. It was found that 34.8 per cent could be included in the "good" group, 44.9 per cent as "fair," and 20.3 as "poor."

Twenty-seven states in the United States, one province in Canada, and fourteen other foreign countries have employed personnel from these stations.

While we realize that the training offered has been unsatisfactory in many respects, it is felt that it is a step in the right direction and that the time will soon come when an adequate foundation in preventive medicine will be offered by our medical schools.

61 *Broadway.*

1. About seventy of the ninety-nine counties have been organized and the work is going forward in a very satisfactory manner.

OBSERVATIONS ON RENAL INFECTION.*

By R. M. LeCOMTE, M. D., Washington, D. C.

As a prelude to the study of infections of the kidney, it is well to review a few of the basic principles of disturbed sensation in the urinary organs. The kidney substance itself is poorly supplied with sensory nerves so that extensive changes may occur in it without there necessarily being any pain referred to the organ. Pain in the kidney is most certainly produced by some lesion which causes swelling of the parenchyma so that the capsule is stretched or by those lesions which interfere with the flow of urine from the kidney pelvis so that that organ becomes distended. With this type of pain producing mechanism, it will be readily seen that an infective lesion which runs an essentially chronic course may last for a long time without causing enough swelling of the parenchyma to produce pain; thus, the slowly destructive processes of tuberculosis seldom produce renal pain until they are surprisingly well established. On the other hand, an acute widespread lesion which is accompanied by marked congestion and early abscess formation will cause pain that is diagnos-

*Read before the Galen-Hippocrates Medical Society, in Washington, D. C., October 13, 1927.

tic very early. The earlier any kidney lesion is accompanied by the shedding off of bits of tissue or the production of blood clots of such a size as to interfere with the emptying of the pelvis, the earlier will kidney pain be noted by the patient. It is interesting to speculate as to whether the pain produced in blocking of the pelvis is due to distention of the fibrous capsule or to an intrinsic mechanism, but it really matters little provided it is recognized with slight intermittent obstruction; a high degree of hydronephrosis and tissue destruction may occur without any remarkable pain being noted by the patient.

Another point is with respect to the ureter. This fibro-muscular tube will cause but little disturbance of sensation unless it is required to expel some bit of solid or semi-solid material that is just a little larger than the lumen of the tube. Colic does not seem to ensue unless the musculature is thrown into spasm. This is shown in the observation of ureteral stones; a stone first noted at the uretero-pelvic junction or at the brim of the pelvis may, at the next observation, be found just above the bladder, without there having been any noteworthy colic in the interval. For the production of ureteral colic it seems necessary that the contractions of the segments be thrown into disorder, for, if the lumen is filled from end to end with a homogeneous mass of uniform pasty consistency, such as pus or fresh blood clot, the musculature may expel it in jets, as it normally does urine, without inducing any pain; on the other hand, a small stone or bit of tissue may produce terrific colic.

A third point is that, although direct sensory fibres are few, the kidney and ureter possess a sympathetic innervation that is admirably adapted to the production of reflexes both sensory and motor—what vegetative neurologists call visceromotor and viscerosensory reflexes. The kidney and ureter are supplied with sympathetic fibres extending from the sixth dorsal to the fourth lumbar spinal segments of the cord. These spinal segments also give off sympathetic filaments to important parts of the gastro-intestinal canal and genital organs and supply filaments of common sensation to skin segments extending from just below the nipple to the lower part of the leg. It is for this reason that gastro-intestinal and bladder disturbances are common in kidney and ureteral disease. Bladder disturbances are particularly common and, apart from actual inflammation of that organ, are apt to manifest themselves as painful frequent urination or as a constant imperious desire to void.

In kidney infections, then, disturbed sensations may manifest themselves as dull, heavy lumbar ache if the kidney is involved, and by an associated or dissociated similar pain opposite the ninth chondrocostal junction anteriorly when the pelvis is distended; by the sharp abdominal cramp of ureteral colic and by sensory or motor reflexes in organs apart from the primary disease. Combinations of these three types occur and afford an infinite variety of clinical pictures.

It is characteristic of genito-urinary diseases that they are frequently complicated so that the presence of a readily demonstrable lesion in the lower tract frequently points to infection elsewhere,—a cystitis may be based on a kidney lesion, or an epididymitis on a prostatitis; in fact, if a lower tract lesion does not readily clear up under proper treatment, it rather points to a complicating focus of infection elsewhere. The presence of pus in the urine should be looked upon as an indication of renal infection unless some other perfectly obvious and simpler cause for it is evident, and when other adequate causes do exit, the kidney should be ruled out if a reasonable amount of treatment to the obvious focus does not clear up or greatly improve the pyuria.

Before the use of the cystoscope and ureteral catheter became general, clinicians believed that kidney infections invariably arose by extension upward from the bladder: they were led to this belief because most patients in whom definite renal infection was demonstrated, had previously suffered from cystitis. Nowadays it is recognized that the kidney infection is primarily a blood borne condition and the accompanying cystitis secondary. Some think that the excretion of living pathogenic bacteria is a function of the normal kidney, that it occurs constantly in the daily life of normal individuals and that only under exceptional circumstances does the kidney become infected by the bacteria passing through it.

Once established and proliferating in the kidney tissue, the bacteria set up an inflammatory reaction in that organ. This inflammation is accompanied by tissue destruction and abscess formation, and, if conditions are favorable, the exudate in the inflamed area may be

absorbed, scar tissue form and no persistent or really important infection result. Under other less favorable conditions, instead of healing by absorption and replacement by scar tissue, the dead material may be taken care of by the deposition of crystals that are more or less rich in calcium, and stone formation result. In still other instances, the abscess enlarges and breaks either through the cortex, when it results in some type of perinephritis, or into the pelvis, whence the pus is discharged in the urine. This last termination interests us particularly because it is then that kidney infection as it is commonly met results.

When this termination occurs, the tissues of the pelvis and ureter of the affected organ also participate in the inflammation and a true pyelonephritis is present. The mucous, submucous and muscular coats are involved and, after healing, their elastic and contractile properties are impaired more or less, depending on the type, extent and duration of the infection. Sometimes the pelvis is extensively altered, sometimes the ureter, but in either event the functional impairment is proportionate to the anatomical damage, and it brings about a definite hindrance to the escape of the urine secreted by the kidney above. Any impediment to the free egress of urine is followed by lowered resistance to infection in the organs situated above the impediment, so that, if material damage has been done to the pelvis or ureter, a vicious circle, which favors recurrence of or persistence of infection is established. Thus, it is evident that, if the process is not controlled early, an infection that was simple in the beginning may persist for a long time and lead to wide-spread damage in the organs involved.

Painful, frequent urination is apt to have a prominent part in the clinical picture presented by acute renal infection, and, in chronic cases, careful questioning will generally ellicit a history of short intense attacks of frequent urination or of nocturia of mild grade lasting over considerable periods of time. When frequent urination persists for long, even if no pus is found in the catheterized specimens, cultures should be resorted to, and, if they are repeatedly positive, the field of examination should be extended to include cultures of specimens obtained from the kidneys by ureteral catheterization. With the finding of pus in a catheterized specimen, the indication for a complete urological examination is clear and this should include an X-ray study with catheters *in situ*. Unless the diagnosis is obvious without it or there is some contraindication to its use, pyelograph should be done; its routine use will give great help in establishing a prognosis and will frequently elaborate the disease picture in many important respects. Functional tests should be used before any operative interference is carried out and they may be extended with benefit to all cases. All methods employed at present are open to some fallacies, and too rigid reliance on them may cloud rather than clear the issue at stake. Since successful treatment is predicated on an accurate diagnosis, it may be necessary to repeat examinations, and this should be done without reserve whenever all points do not check to the same end.

Treatment must include a search for and eradication of such foci of infection as may be present. Foci in the head are particularly common. Dentists are loath to remove dead teeth unless periapical abscesses are shown in the X-ray; but, since cultural methods have shown all devitalized teeth to be infected, the physician should not scruple to over-rule the dentist's objection to their removal. Treatment of infected root canals without the removal of the body and crown of the tooth is too uncertain to be considered when such an important organ as the kidney may be at stake. In addition to teeth and tonsils, the gastro-intestinal canal must be investigated and, in the genital sphere, the prostate in men and cervix in women.

Given a case of acute infection with fever and other signs of generalized infection, it is permissible to treat the patient by rest, bland diet, forcing fluids and the administration of urinary antiseptics for a few days. Some cases will clear up clinically and occasionally the pyuria disappear under this regime, but these are the exception, and the results of pelvic lavage are so uniformily beneficial that it should be undertaken at the earliest possible moment. If evident ureteral obstruction is present, ureteral catheterization should be done at once for the purpose of relieving the back pressure as well as combating the infection. Needless to mention, appropriate treatment should be given ureteral stones and strictures and other obstructing factors, such as uterine fibroids and inflamed seminal vesicles. Lavage

should be persisted in until the patient is free from clinical symptoms and the bladder urine negative for pus for at least one month.

CONCLUSIONS.

Infections of the kidney may present such vague symptoms and signs that the clinical picture may give no hint as to the nature of the disorder. Vague abdominal pains and frequent urination may be the only leading symptoms in renal infection.

All cases in which pus is found in the catheterized specimen should be submitted to a complete urological examination. This should include an X-ray study of the entire tract with the catheters in the ureters. Pyelography is necessary in a large proportion of cases to determine the amount of distention of the ureter and kidney pelvis and to delineate unsuspected anomalies or neoplasms.

In cases not complicated by obstruction or stone, pelvic lavage frequently cures the infection and, in cases complicated as noted above, furnishes an invaluable method of lessening the infection and bringing the patient to an improved status for whatever operative intervention may be necessary.

1801 *Eye Street, N. W.*

PRENATAL CARE.*

By EUGENE L. LOWENBERG, M. D., B. S., Norfolk, Va.

It is my purpose tonight to emphasize the "Preventive Medicine" of obstetrics, the modern prenatal care which has been so largely responsible for the reduction in infant and maternal mortality and morbidity. Pregnancy being a physiological function, we still do not understand clearly why the pregnant state carries with it the liability to certain major and minor complications, but we have learned that by months of wary watching, of advice and supervision, we can terminate the average case happily, with the mother unharmed and a healthy infant.

Already has the public caught on to the merit of the new order of things and mothers engage us early, expect to be questioned carefully and completely examined.

I shall not dwell at length on the initial history and physical examination. The former should be as inclusive as any medical record. Affections which may have impaired the mother for labor—heart disease, chronic kidney disease, tuberculosis, nervous disorder, hyperthyroidism, are of especial importance. In multiparae, in the history of the previous pregnancies, the duration of gestation, presence or absence of toxic symptoms, unusual presentations, hours in labor, dry labor, weight of child, spontaneous or instrumental deliveries, give us an idea what to expect in the present labor. Any spotting after the last regular menstruation should be noted. Similarly, the physical examination should be a complete one. In pregnancy, in addition to external and internal pelvimetry, the vaginal examination, and the obstetrical examination of the abdomen, we are particularly interested in (1) the general skeletal make up; (2) the teeth, because of their tendency to decay at this time, and because of the possible relation of focal infection to the toxemias or pyelitis of pregnancy; (3) the nipples; (4) the thyroid gland, and (5) the legs with special reference to varicosities and edema.

With an estimation of the blood pressure, a complete urine analysis, hemoglobin estimation, weight determination, blood Wassermann, and vaginal smear, we feel we know our patient and already have a firm foundation for the visualization of her confinement.

After indicating the date of confinement, which, by the way, may be off by one to three weeks according to whether conception took place just before or just after the last menstruation, one proceeds to advise the mother as regards, (1) diet and general hygiene; (2) care of the commoner non-serious complications or accompaniments of pregnancy; (3) symptoms of the more serious complications, the occurrence of which you wish to be notified; (4) as to future consultations, and (5) the arrangements for a nurse, and preparations for confinement.

In the early months of pregnancy, no modification in diet is necessary unless the mother has unusually vicious habits, as kidney complications rarely occur till after the fifth month. After the seventh month every patient should be on an anti-nephritic diet. The dietary conditions which must be observed more particularly are, first, abundant supply of carbohydrates, calcium and vitamins; second, restriction of foodstuffs likely to upset digestion, or to throw added strain on the kidneys.

*Read before the Norfolk County Medical Society.

Foodstuffs permitted and to be encouraged are:

Starchy foods: Bread, potatoes, rice, noodles, cereals, corn.

Fruits: Grape-fruit, oranges, apples, pears, plums.

Green vegetables: Spinach, lettuce, celery, green peas.

Fowl: Chicken, squab, porridge, and lighter meats, as lamb chops, bacon, ham.

Fluids: Water, milk, cocoa, lemonade, weak tea. Water is the best guardian of the kidneys at any time, and in pregnancy assumes a position of paramount importance. Eight to ten glasses should be taken daily, best between meals.

Restricted or prohibited are:

Meats: Red meats, fish, beef-tea, beef soup. One meat meal a day is ofttimes permissible.

Eggs: Best restricted to one egg a day, boiled or poached.

Rich and highly seasoned foods,—pastry, welch-rabbit, lobster, fancy desserts.

Condiments: Radishes, Worchester sauce, pickles, pepper, etc.

Fried foods: Fried potatoes, eggs, greasy fried meats.

Vegetables with a strong volatile oil (strong odor), onions, cabbage, cauliflower, turnips, raw pineapple, acid berries, alcohol, strong tea, coffee.

The mother need not eat more than she is accustomed to. On the contrary, over-eating is a common cause of toxemia of pregnancy.

Foodstuffs rich in calcium, such as asparagus, spinach, banana, egg, cow's milk, must be taken abundantly during this period to make up for the added demand for this element occasioned by the growing fetus. A dietary insufficient in calcium not only predisposes to decay of the teeth, but likewise is believed to predispose to a low blood calcium in the infant, with the resultant tendency to infantile spasmophilia.

Particularly important in the hygiene of the mother in pregnancy are (1) reassurance, avoidance of worry or mental excitement; (2) attention to the teeth and tonsils—a competent dentist should be seen early; (3) protection of the kidneys by diet, as above: (4) avoidance of exposure, and activation of the skin by daily warm baths. Exercise is necessary, should be taken in the sunlight and the fresh air, and should consist chiefly of walks, well within the limits of fatigue. Any exercise implying the possibility of a jolt is prohibited, such as running up and down stairs, tennis, horse-back riding, automobiling over rough roads, railroad journeys. Dancing and golf are permissible till the later months of pregnancy. Where the patient is accustomed to it, careful sea-bathing does not harm, but if the water is rough, may bring on a miscarriage. Standing about increases the tendency to varicose veins and aching of limbs and the mother should be warned against this. Close and stuffy rooms, theatres and late hours should be avoided.

As regards work, the ordinary household duties may be continued throughout pregnancy, but any work which puts a strain on the abdominal muscles is prohibited—i. e., lifting heavy objects, stretching to hang up washing.

The skin does much to help the kidneys in the way of elimination and should, as mentioned above, be kept active by a daily warm bath. Turkish baths, cold baths, hot sitz baths are prohibited. Over-use of the eyes is to be warned against. The nipples should be prepared for nursing by daily cleaning with a rough cloth, soap and water, and an occasional application of mineral oil. In the latter months of pregnancy, applications of compound tincture of benzoin are made if this treatment has not toughened the nipples, and if they are retracted they should be gently tugged at in an effort to make them more erect.

Nothing should be worn that forms a band around the waist or restricts the circulation in the legs. Clothes should hang from the shoulders, circular garters should be discarded for ones attached to the underwear. If corsets have not been worn previously, they need not be now, but a woman who has been accustomed to one had better continue to do so to support her back, loosening the same about mid-term and substituting a special maternity belt in the later months. Clothing over the breasts should be loose, that the nipples may not be pressed in. Pendulous breasts may be supported by a light binder, and in multiparae with lax abdominal walls, in whom the uterus tends to sag forward and backache is complained of, an abdominal belt may be worn (being directed to the lower part of the abdominal cavity). The pregnant woman has to walk with a slight lordosis to maintain her

balance. Elevation of the heels makes this worse. The shoes, therefore, should be broad and with low heels. The added weight the mother has to carry causes a tendency to flat feet, so that she should be warned to stay off her feet as much as possible, and arch supporters should be prescribed when indicated. Douches are to be avoided unless given under direction of the doctor for a specific need. Coitus during pregnancy predisposes to miscarriage and to puerperal sepsis and is best withheld, certainly after the seventh month.

Morning sickness, constipation, and sleeplessness are common concomitants of pregnancy. The vomiting of early pregnancy is often central; therefore, suggestion or psychotherapy is of great value. A light breakfast of tea and toast taken in bed before the patient has even sat up in the A. M., and an increase in the carbohydrates in the diet is frequently curative. More severe cases, not including hyperemesis gravidarum, are sometimes relieved by organotherapy, such as corpus luteum, one ampoule three times a week to twice a day, or intravenously, if necessary, as advised by Hirst: or the placenta compound of Harrower; by alkali therapy in the form of an alkaline powder or the A. B. C. mixture, potassium acetate, potassium citrate, potassium bitartrate, grains ten of each. Reflex causes, such as a retro-flexed uterus or erosion of the cervix, should be removed. The administration of large doses of sedatives, such as bromides or luminal is helpful. A gastric lavage with 5 per cent soda solution, followed by the injection of a couple of ounces of Epsom salts through the stomach tube, large doses of bromides (60 grains) alternating with glucose, and soda per rectum every 6 hours, glucose 10 to 20 grams in 50 per cent or more diluted solution, intravenously, with or without insulin (one unit to three grams glucose), will control most cases of hyperemesis gravidarum. It is well to remember that poor teeth and oral sepsis may increase the gastric distress of this period.

Toxic absorption from the colon affecting the system in general and the kidneys in particular, and sluggishness of the bowels are to be rigidly avoided. Much can be done by emphasizing the necessity of going to the stool at a regular time each day, by increasing the fruits and green vegetables in the diet, by forcing fluids and having the patient drink an extra glass of warm water on arising in the morning and on going to bed at night. A good plan is to give mineral oil, one tablespoonful, after each meal with a dose of a stronger cathartic such as cascara at night. Leave off the cascara the next day and on the next reduce the mineral oil to twice a day, and then gradually discontinue it entirely. Where tenesmus exists, a glycerine suppository may help, or a rectal injection of 6 ounces of warm olive oil, to be retained over night. Useful laxatives in pregnancy are cascara, milk of magnesia, liquid petrolatum, Pluto water, phenolax, occasionally citrate of magnesia. Castor oil, calomel, Epsom salts, enemata, are to be avoided.

For sleeplessness, main reliance should be placed on fresh air, exercise, suggestion. Sodium bromide, grs. xv, t. i. d., with a double dose at night, is very useful.

Assuring the patient that you mention the untoward symptoms only because, by taking proper care of the same, real complications can be avoided, the physician requests that he be notified should there develop severe headache, spots before the eyes, swelling of the feet or eyelids, precordial pain, excessive vomiting, reduction in the output of urine or an increase in its concentration, vaginal bleeding, or profuse vaginal discharge. In the latter months of pregnancy, the size and weight of the gravid uterus may cause discomfort and lead to fatigue on slight exertion, shortness of breath, bearing down, backache, aching in the groins and legs. Such symptoms do not mean an untimely end of labor, and the patient should be reassured. Where possible, the patient should be given a pamphlet or some other written form containing a resumé of your instructions and a list of the articles needed for the confinement.

The greater part of the physician's supervision of the mother during pregnancy is done through routine antepartum visits, and it is by information thus obtained that he is able to forestall many complications of pregnancy and guide pregnancy to a timely and happy termination. The patient is to return every three weeks up to seven months and every two weeks thereafter, and more often when indicated. If the patient fails to show up, it is the physician's duty to send a card reminding her. The patient is weighed, blood pressure taken, urine examined, height of fundus

estimated, questions put as to possible complications, and should these have arisen, with proper explanation to the patient to avoid frightening her, appropriate treatment instituted. Moderate hypertrophy of the thyroid is a fairly common concomitant of pregnancy, but is usually transient or disappears after delivery. This goitre of pregnancy is a hyperplastic or a colloid goitre similar to that which develops at puberty, and as such may be presumed to be associated with an iodine deficiency. Whether or not to give iodine during this antepartum complication is, however, still controversial. Many obstetricians advocate its use both as a prophylactic and therapeutic measure for the mother and as a prophylaxic against congenital goitre in the child. Two grains of sodium iodide may be given once or twice daily.

Any vaginal bleeding after the first few months of pregnancy must be looked upon with suspicion. Continuous spotting may be the first indication of placenta previa. Threatened abortion calls for a week to ten days in bed after bleeding has stopped.

On the prenatal visit of the fifth month, examination should be made to determine if the uterus has risen out of the pelvis. Incarceration of the retroflexed uterus is a not uncommon cause of miscarriage.

Syphilis in the mother calls for energetic treatment as soon as it is discovered. Treatment begun even as late as the seventh month may lessen the chances of the infant having the disease.

A pregnant woman seems to have a lower blood pressure than before she was in the pregnant state. The blood pressure of the antepartum woman is thus generally low—110-100 systolic, 60-70 diastolic. A systolic pressure of over 130 may be considered abnormal and should indicate further interrogation of the patient and a consideration of the other signs of impending toxemia—headache, dizziness, edema, albumen, visual changes, gastric disturbances. A rise of 10 or 15 degrees, even though it only means a systolic of 115 in a patient formerly having a systolic of 100, is significant. The blood pressure is one of the most important indices of approaching toxemia. In the same way, albumen present, where formerly absent, or increasing in a short interval of time, may have grave import. Increased concentration of urine (high specific gravity) may indicate insufficient intake of fluids, or, more significantly, the presence of pus in the urine, as in pyelitis. A determination of the total 24-hour output may give evidence of grave kidney impairment. Sugar in the urine of a pregnant woman usually is lactose (due to mammary secretion) but tests to exclude glucose should be performed. The weight is an important means of telling whether the mother is in metabolic balance while carrying the foetus. A slight loss is to be expected in the early months, but in the latter half of pregnancy 10 to 15 pounds should be gained (about two pounds per month). A rapid loss or a rapid gain is abnormal. A normal increase in weight indicates a sufficient dietary.

Personally I believe that the size of the child can be influenced in some cases by restricting the diet of the mother and, in any event, feel that unusual gain in weight calls for reduction in total caloric intake.

Throughout this period almost preternatural significance should be attached to the slightest abnormal symptom or sign. In this way, one begins to treat the possible complication before it has actually arisen. A slight increase in albumen, or a small but real rise in blood pressure calls for instructions to the patient,—rest, greater restriction in diet, increased intake of fluid, attention to bowels, and a reexamination in a few days. And should more definite signs of impending toxemia arise, the patient should be put to bed, hospitalized, and treated as a sick woman—with a diet of milk and fruit juices with sugar, Epsom salts daily, diuresis with a salt such as potassium citrate or ammonium chloride, colonic irrigations—before she is really sick.

If the blood pressure does not fall and the other symptoms or signs clear up under such treatment, the patient should be carefully studied. Kidney functional test, complete blood chemistry, including plasma CO_2 urinary acetone, and liver functional tests are in order that treatment may be based on rational lines, according to the degree of acidosis, of true nephritis, and of eclamptic manifestations. Acidosis may be relieved by glucose intravenously. Sweating, a saline diuretic, and large amounts of water by clysis, per rectum and intravenously as a 10 per cent glucose solution, promote the action of the kidneys. The Strogonoff treatment seems the

most popular for true eclampsia. Magnesium sulphate, long used as a decongestive and a central nervous system sedative to control the convulsions of tetanus, has recently been used with remarkable success to control the symptoms of preclamptic toxemia and the convulsions of true eclampsia. Twenty c.c. of a 10 per cent solution is given intravenously, repeated in an hour if necessary. Should there be any undue respiratory depression from this, the antidote—calcium chloride, 5 c.c. of a 10 per cent solution, is given intravenously.

About six weeks before the expected date of confinement there should be a prenatal visit, preferably at the home of the patient. As on former visits, interrogations as to symptoms of complications are put, urine examined, blood pressure taken, and the matter of diet, bowels, fluid intake, and general hygiene again emphasized. The heart might well be re-examined at this stage. Obstetrical examination of the abdomen is repeated, and the duration of pregnancy confirmed by the height of the fundus and date of quickening; also, the position, presentations, degree of engagement are determined. The foetal heart is counted, the size of the baby estimated. A vaginal examination should be done, the presentation and position confirmed, abnormalities sought for, and internal pelvimetry repeated. Internal examination at this time is especially important where external pelvimetry has given border-line measurements, and should be carried out with aseptic precautions; the nearer to term, the greater is the need for caution and the more inadvisable the examination. Near term rectal examination should replace vaginal examination where possible. The physician should visualize the labor, and plan to handle any abnormality that may exist.

At this visit it is well to spend considerable time carefully instructing the mother in the care of the new-born child.—the care of the navel, the time and duration of feedings, the care of the bowels, etc. The importance of breast feedings both for the baby and the mother should be explained and emphasized. The symptoms of on-setting labor are described. The mother is warned against tub baths from now on. She is given plain instructions as to how the doctor may be quickly reached and what to do till he arrives. The preparations for confinement are again gone over, the nurse engaged and instructed as to what you expect of her.

And the patient should go into labor clean, with pubic hairs shaved, bowel and bladder empty, and aseptic precautions taken.

Exercising prenatal care as outlined above, the physician has many opportunities and many means of decreasing the dangers of pregnancy both for the mother and the child. He early discovers such lesions on the part of the mother as call for the induction of abortion, as severe mitral diseases of the heart, advanced tuberculosis, or Graves' disease; he replaces the gravid retro-flexed uterus before incarceration occurs; he forestalls the toxemias of pregnancy, eclampsia; he discovers early and treats syphilis in the mother, reducing the chances of the foetus having the disease; he advises the mother how to avoid accidents causing abortion or premature delivery; he is watchful for premature separation of the placenta, discovers placenta previa early, and is prepared to handle same; he detects early abnormal presentations, such as breech, and converts them where possible; he anticipates disproportion between head and outlet, contracted pelves, and has a program mapped out for the handling of same—trial labor or elective cesarean section; he reduces the opportunities for puerperal sepsis to a minimum.

Sociologically, prenatal care is of vast importance. About 25,000 women die annually in the United States from child-birth, 100,000 babies are born dead, and 100,000 more die within a few days after birth. It is probable that this maternal and fetal mortality could be reduced to half by proper ante-partum care. Social workers could do much towards bringing the poor and uneducated into the care of well-run clinics Physicians must emphasize the need of such care to their patients from early pregnancy. The need for more ante-partum clinics, education of the laymen, and maternity centres is apparent. For the mother, for the physician, for the people at large, prenatal care is thus an all important phase of medical work.

Medical Arts Building.

THE CO-OPERATION OF THE ATTENDING PHYSICIAN.*

By WADE MILES, Esq., Bristol, Va.

Deputy Commissioner, State Industrial Commission.

The necessity of full and free co-operation of the attending physician with the Commis-

*Read by invitation before the Wise County and Norton (Va.) Medical Societies in Norton, February 24, 1928.

sion in the administration of the compensation law will be admitted by all, and the purpose of my discussion will be to acquaint the physician with the application of his service to such proper administration, from the standpoint of the Commission.

The Law Requires.

The statute requires the employer to furnish such necessary medical, hospital and surgical attention to the injured employee as the nature of his case may reasonably indicate, for a period of sixty days, which services may be continued for a longer period, optional with the employer.

Manifestly, if the employer is to pay compensation in all cases of injury, and is bound to furnish proper medical, hospital and surgical treatment, he should be given a reasonable opportunity to ascertain what the injuries are, their probable extent and duration, and to keep himself so informed throughout the period of payment, and to select the person or persons and instrumentalities to furnish such service, and the law so provides.

On the other hand, the law requires that the injured shall accept such service; and, of course, if an injured is required to accept the services of a physician of another's selection, the person so selected must be reasonably skilled in the service he is to perform.

Rights and Duties of Physicians.

If the physician which employer selects prematurely discharges the employee as cured, and the employee secures further treatment, the employer must stand the expense thereof, provided it is within the statutory period. The employer is responsible for a mistaken diagnosis of the case by its own physician.

When the employer's physician in charge of an injured employee, not desiring to assume sole responsibility of treating a grave injury, acquiesces in the calling in consultation of another physician, the necessity of such assistance is presumed, and the reasonable cost thereof should be borne by the employer.

It is within the province of a physician placed in charge by the employer to make all necessary arrangements for such treatment, consultation, and assistance as in his judgment are reasonably required to cure and relieve the patient from the effect of the injury, and the expenses thereof are properly chargeable to the employer.

The employer is only liable for the reasonable costs of such treatment to the employees; therefore, the charges of the physician should be limited to such charges as prevail in the same community for similar treatment of injured persons of a like standard of living when such treatment is paid for by the injured person, and not increased because it is the employer who must pay. In other words, the reasonableness of a charge depends on the position of the average employee, not on the position of the particular man treated or the financial condition of the employer.

Employer Must Provide and Injured Employee Must Accept Medical Attention.

If the employer refuses to give such attention, the injured may secure such service himself at the expense of the employer. If the injured refuses to accept such attention, no compensation shall be paid during the period of such refusal, unless such refusal was justified.

We have had instances where the injured refused to permit a physician to attend him. Other refusals are:

(1) Refusal to go to the hospital.

(2) Refusal to submit to operation.

(3) Refusal to co-operate with the attending physician in the way of carrying out in a reasonable way the instructions of the physician.

(4) Refusal to report for examinations, by specialists, diagnosticians, etc.

In all cases, the questions of whether or not the injured did refuse, and, if so, whether such refusal was justified, are questions of fact to be determined by the Commission; and it is the duty of the attending physician upon such refusal immediately to notify the Commission, in order that it may take such action as may be necessary to remedy the situation. This is a duty that the physician not only owes to the Commission, but jointly owes to the employer and employee. For, one or the other's rights may be prejudiced seriously. (It would be well to state in this notification the necessity for the proferred treatment, and the reasons given by the injured for his alleged refusal to accept).

In this connection, the law requires that employee "shall accept an attending physician," and it is his duty

(1) To go to the hospital when advised to do so by such physician;

(2) To submit to such reasonable operative treatment as may be advised by skilled surgeons;

(3) To co-operate with the attending physician and reasonably carry out his instructions;

(4) To report for such examinations, either to the attending physician, or to specialists and diagnosticians, as in the opinion of the attending physician may be necessary.

On the question of the employee submitting to operations, the Commission has held that where the evidence is satisfying good results and most likely a complete cure may be effected by resorting to an operation that is unattended with danger, that it is the duty of the employee to submit to such operation, provided it is such an operation as an ordinary prudent and courageous person would submit to for his own benefit and comfort where no question of compensation was involved.

The effect of the refusal to accept medical attention is also a question of fact to be determined by the Commission. An employee can not be charged with any greater part of his disability than that which was caused by his failure to accept the treatment.

Hospital and Medical Attention is Part of Compensation.

The hospital and medical attention required by the statute is a part of the compensation to be paid by the employer to the employee. This includes dental bills where the replacement of teeth constitutes a necessary part of the curative treatment; nurse bills, where such attention is reasonably necessary and ordered by the physician; the reasonable expenses of the employee in going to and from the places of treatment and his reasonable expenses while away from home receiving such treatment.

Special Attention.

The employer is liable for special attention given the injured, and the results thereof, as well as the cost of same. And, if, as a result of the special treatment, death or greater disability results, the employee's compensation will be adjusted accordingly.

Physicians' Opinions on Extent of Disability.

There is another service for which the physician is called upon which is very important to the Commission in the proper and equitable administration of this law, and that is his evidence before the Commission in the nature of expert opinion on the various questions constantly arising in the trial of cases.

There are a number of degrees of disability. Usually, following an injury of any consequence, there is a period of temporary total disability, followed by a period of temporary partial disability; or, temporary total disability followed by permanent partial disability; or, temporary total disability followed by some specific loss of use of a member. In addition, we have the complete and permanent disability cases, facial disfigurement, the hernia, the traumatic diseases, such as pneumonia and appendicitis, and the aggravation by injury of a pre-existing condition.

It is not as difficult for the Commission to determine when temporary total disability ends and the partial disability begins, or even when the partial disability ends, as it is to mete out uniformly the percentage of the loss of use of a member when its usefulness is partially lost by reason of the injury. For, there is no absolute and scientific way of arriving at this percentage. It is a guess the best we can do. However, the Commission has determined that those who are most likely to guess correctly, in addition to the injured himself, are the physicians. These estimates widely vary in some instances. In order to make these estimates uniform and the awards for partial losses of use the same in every section of the State, we believe that it is well for the examining physician to state, in making his estimate in percentage, the conditions which he finds causing the loss of use, and then after all the evidence is in, that we use our experience with the particular case in comparison with other similar cases, and fix the percentage of loss of use, although in doing so it may sometimes become necessary, in our judgment, to lower or to increase the estimate made by the physician.

So, in fixing the extent of the disabilities in these cases the examining physicians should, and they do, exercise a great deal of care. The Commission, to a large extent, has to rely upon their judgment, and their opinions on such questions are almost conclusive upon the Commission. Each one of you in a measure holds the reputation of the other in his hand. Especially is this true as concerns the injured employees.

Daniel Webster once said that the Ten Commandments, the Golden Rule, and the Law of Love were a part of the Common Law of the land, and the physicians and employers and employees who act in the spirit of this law can and will arrive, in their several industries and occupations, at adjustments which will prove to the mutual good and best results to all, and at the same time help the Commission solve its problems in adjusting the burdens of the cost of compensation equitably upon economic principles.

Somewhere in France there is a monument to Pasteur, on which is a brief inscription in French, which is most impressive. It may be rendered freely in this way: "To cure sometimes; to relieve often: to comfort always."

This is rather a fine summary of the opportunity of the physician.

In conclusion, let me state that the co-operation of the physician in the administration of the Workmen's Compensation Law is worthy of commendation.

INTESTINAL STASIS—FUNCTIONAL TYPES.*

By MORRIS I. BIERMAN, B. S., M. D., Washington, D. C.

One would hesitate to assign constipation a place of prominence in the family of human ailments. Yet the relief of this relatively benign condition has had a place of first importance in therapeutics for many thousands of years. Even today there is undoubtedly more medical advice given for the relief of constipation than for any other ailment. This is partly due to tradition amongst the masses that all therapeutics must commence with a drastic cathartic.

Secondly, but not of less importance, is the empirical fact that activation of the bowels does relieve many obscure clinical syndromes.

Yet experimental proof has been brought to show that the mechanical distention of the rectum with cotton will produce all the so-called "toxic" manifestations of constipation. Furthermore, we are all familiar with that peculiar sense of well-being which the chronically constipated individual experiences immediately after a satisfactory evacuation, at which time there can have been no lessening in the amount of the absorbed material. Case histories have been reported in which the intervals between bowel movements have been days, weeks, and even months without untoward symptoms.

On the other hand, it has been found through X-ray studies that many individuals complain of symptoms similar to, or even identical with, those which we attribute to constipation, yet do not at any time have their rectums distended with impacted fecal material. In other words, the intestinal stasis is not in the rectum, but at some other point, or points in the intestinal tract.

Experimental proof and clinical experience have shown, beyond any question of a doubt, that obstruction or delay of the intestinal contents in the small bowel will give rise to alarming symptoms. And, as a general rule, the higher the obstruction, the more severe the symptoms.

There is, however, a point in the small bowel at which intestinal stasis becomes a condition of somewhat minor importance, that is, one not directly endangering life—the terminal portion of the ileum. When the stomach is low and hypotonic, when the colon is ptosed, when the body-tone is relaxed, in a word, when the patient is a victim of visceroptosis, the terminal ileum and the ileocecal sphincter may partake of the general muscular relaxation. As a consequence, the intestinal contents are but feebly propelled by the ileum into the cecum. The intracecal pressure, in turn, produces regurgitation through the relaxed ileocecal valve. This duplicity of mechanisms results in definite stasis in the terminal portion of the small bowel. Frequent nausea and occasional vomiting are forceful reminders that stasis here is harmful. This type of constipation can be permanently relieved only by restoring the normal body tone, leading in turn to greater efficiency of the ileum and ileocecal sphincter. The forced feeding of large amounts of food in the accepted treatment of visceroptosis helps restore the normal tone of the intestinal muscle, and is reflected in the better evacuation of the ileal contents. Mild intestinal stimulants will also aid in restoring the normal intestinal tone.

Cecal Stasis.—The development and mechanics of the cecum and ascending colon are such as to favor the retention here of the intestinal contents for a longer period of time than any other portion of the gastro-intestinal tract. Cecal peristalsis is at best very poor, probably for the purpose of further absorption of liquids with their dissolved nutritious

*Read before the Gastro-Enterological Section of the American Medical Association, May 18, 1927.

particles. But what has been intended for a physiological process for the good of the individual, may, by a little overdoing, become pathological, and stasis result. The increased intracecal pressure favors cecal distention and atony, and symptoms resembling mild chronic appendicitis may appear. The pains may be due to the distention of the cecum, or to the dragging on the cecum by the increased amount of material. The complete evacuation of the cecal contents can be obtained only by drastic catharsis. But as the condition is a chronic one, dietetic treatment with mild stimulatory catharsis will undoubtedly be more satisfactory.

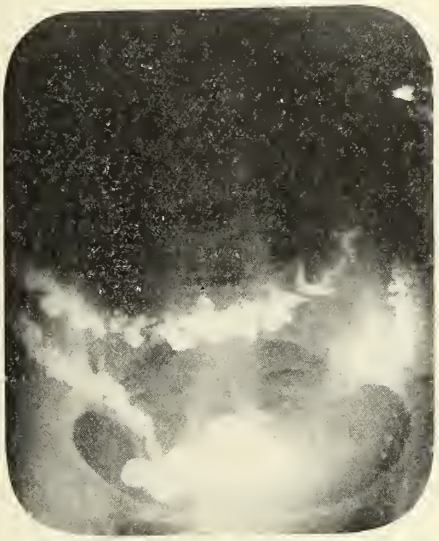

Fig. 1.—Markedly spastic colon showing irregularity of haustrations.

Spastic Constipation.—Keith has claimed that "in the great majority of those cases which are classified under the somewhat elastic term of 'intestinal stasis,' the symptoms do not result from atony of the musculature of the bowel, but from a hypertonicity of those parts which are normally in a state of tonic contraction." Alvarez has shown that each section of the bowel has its own normal gradient, that is, its own normal response to stimulation. He has also shown that, when a section of the bowel for any reason becomes more sensitive to stimuli than normal for that region, and the response to the stimulus is greater than the gradient on either side of the point stimulated, the peristaltic waves will travel in both directions, much as the ripples caused by a thrown stone will travel both up and down stream. Just such a condition occurs in the large bowel. The cause is obscure, but frequently the transverse and descending colons become very spastic, and this spasticity may assume such proportions as to impede the forward progress of the intestinal contents. And I have even observed retrogressive movements of the intestinal contents, where the ascending colon was already empty one day, and again partly filled the next. The cecum seems to enter but little into the condition. This type of constipation occurs most frequently in well nourished individuals, and is characterized by attacks of severe intestinal pain, tenderness on pressure over the colon, and even vomiting. The patient complains of "gas," and the barium meal seems to aggravate the condition. It is very frequent to find that on the second day of a routine gastro-intestinal examination the patient complains of having had one of his worst attacks the previous night. Attacks such as these may even require morphine for their alleviation. The relief of this type of constipation has been admirably worked out by Dr. Alvarez in what he calls his "smooth diet." This diet has no roughage whatever, and is very concentrated, so that stimulation of the intestine is at a minimum. An antispasmodic such as belladonna will also aid in overcoming the colonic spasticity.

Atonic Constipation.—There is another type of constipation which is in direct contrast to the type just discussed. Instead of the colon being abnormally sensitive to stimuli, for some unknown reason its threshold of response has been considerably increased. Due to this blunting of its sensitiveness to stimuli, the large intestine does not contract firmly upon its contents, and consequently the intestinal motility is diminished. A definite clinical syndrome appears to be wanting, and the patient's complaints are quite vague, pointing to no specific organ. The condition is most frequently seen in the asthenic type of individual. In contradistinction to the spastic type of constipation, stimulation is necessary. Bulk is one of the best intestinal stimulants, yet bulk is already present without avail, so that stimulation from without must be considered. Cascara, senna, and the like will be found quite beneficial because of their direct action on the colonic musculature.

Dyschesia.—And, finally, we come to a still different type of constipation,—one in which there is really no abnormality of the intestinal

tract at all. The difficulty lies entirely within the rectum itself. Many people through embarrassment, preoccupation, or indifference, delay evacuation of the bowels until a more favorable time. This neglect in emptying the rectum leads to blunting of its sensitiveness and atony of its musculature. As a consequence, the voluntary muscles that assist in defecation also become weak, and when defecation does take place, only part of the rectal contents are discharged. Thus, we see the strange phenomenon of a normal gastro-intestinal tract, with normal movements of intestinal contents, and yet severe, obstinate constipation. Moderate degrees of this condition are met with daily in routine gastro-intestinal examinations. Purgatives will not aid in overcoming this type of constipation, as the intestinal tract is normal. Only the rectum is at fault. The treatment should be by enemas rather than cathartics. The rectum is normally empty, and distention by fecal material gives the stimulus. Responding to the slightest stimulus will do a great deal to overcome the condition.

Fig. 2.—Dyschesia. Showing Rectum atonic and distended with impacted material.

In summary, then, five different types of constipation have been enumerated:

First, ileal stasis, where the patient complains of frequent nausea and occasional vomiting but no pain. The condition is associated with visceroptosis, and can be permanently relieved only by correcting the underlying condition.

Second, cecal stasis, which results in distention and atony of the cecum, with symptoms resembling mild chronic appendicitis. The patient may not be aware of the constipation. Stimulatory cathartics and dietetic treatment are indicated.

Third, spastic constipation, occurring mainly in well-nourished individuals. The patient complains of "gas" and the condition is characterized by attacks of severe intestinal pain and tenderness on pressure over the colon. Soothing the bowel, not with barium, but with concentrated food and an antispasmodic is necessary.

Fourth, atonic constipation, which occurs most frequently in the asthenic type. It is characterized by vague, indefinite complaints on the part of the patient and inactivity of the bowels. Medicinal stimulation of the colon is indicated.

Fifth, dyschesia, in which the entire intestinal tract is normal with the exception of the rectum. The distention and atony of the rectum must be overcome by enemas and re-education rather than diet and purgatives.

1801 *Eye Street, N. W.*

PHYSICAL EXAMINATIONS NECESSARY IN DIAGNOSIS.*

By C. R. ANDERSON, M. D., Winchester, Va.

Diagnosis is the bestowing of a name upon a certain assemblage of pathological phenomena. Its final object is to be able to treat a disease intelligently.

The object of this paper is to impress upon the profession the very great importance of making a careful and thorough examination of those who seek the physician for relief of their ailments.

We all admit that the scientific way is the right way, but, due to the rush and bustle of business, how prone we are to become negligent, careless, and jump at conclusions, taking too much for granted, thereby making serious mistakes, damaging to the patient and often to the doctor. For these reasons I desire to lay stress on physical examinations, which include the various laboratory methods. The term physical signs is by common consent applied to objective symptoms, which latter are usually much more important in arriving at a diagnosis than the subjective symptoms, of

*Read at the meeting of the Warren, Rappahannock and Page Medical Society in Front Royal, Va., November 9, 1927.

which we hear so much in office and home, which are often puzzling, misleading or incongruous.

A diagnostician must be a good observer and at the same time be able to reason correctly. Approach all cases with a mind open to impression and without preconceived and fixed ideas. It is not my object to underrate the importance of subjective symptoms, but fear we may be misled thereby and become content to draw conclusions, make a diagnosis and institute treatment which later we may regret. We admit physical examination consumes time and labor but the reward of finding the trouble outweighs the labor and time spent. Even if we are unable to produce a cure, the patient is satisfied and often makes use of the expression, "I am glad to know my trouble; I have had a thorough examination and I accept the consequences".

How many repeated visits have we made to homes and at each trip the diagnosis is still in doubt. This, perhaps, could have been established at the first visit if we had been more thorough in our first examination,—made examination of urine, stethoscopic examination of back, taken time to turn the patient on his side, examined the middle ear, looked in the throat, looked around and exercised scientific reasoning as well as scientific observation. Had such examinations been made, established conclusions could have been deduced from them —not as accurately, I admit, as in mathematics, —as 3 and 3 does not always make six in the reaction of the human body;—if so, we would not encounter serious symptoms in some patients from a medicinal dose of quinine, or urticaria after eating strawberries or shell fish.

The very reason that patients often seek consultation of so-called specialists in the larger cities, is due to the fact that the family doctor has failed to exercise the agencies at his command in making a careful examination, overlooking the little things, not making use of the X-ray or laboratory and other appliances of diagnosis. Often these patients have a perfect right to go without being referred, to seek the services of one who will stand on his feet and put forth efforts to find the cause and often to give relief.

Thoroughness, equipment and industry are and should be demanded by the laity of the medical profession and there is a general trend that they are willing to pay for the right kind of services.

The vest pocket C-C and favorite prescription may satisfy some, a few, but not the masses. The masses are looking for attention; they want to observe and be observed.

Under objective symptoms, observe general appearance of dress, general behavior, clothing buttoned with wrong button, vest soiled with dropping of food, ammonical odor, shoes unfastened—all indicate forms of pathologic condition. Be sure to take in consideration height, weight, conformation of body, diathesis, cachexias, posture in bed, the dorsal inert or passive posture when the patient lies on back but is slipping towards foot of bed. This uncomfortable position, which interferes with the respiratory movement, is observed in conditions of great weakness, acute infectious diseases, and is especially characteristic of typhoid fever, even at an early period, because of the muscular weakness and mental apathy. The rigid dorsal posture with both legs drawn up may be indicative of general or pelvic peritonitis; one leg flexed, appendicitis or hip disease; lying on one side, usually some acute infection of chest, lying usually on affected side to limit motion, thereby lessening pain.

Observe station, the way the patient stands. See if there is deviation or swaying from the normal with eyes open or closed.

Gait should be attentively observed, with the legs stripped and in his bare feet.

How often in meeting people unprofessionally does one form an unconscious judgment of character and peculiarities based upon observation. The furtive look and the inability to meet squarely the eyes of the physician may indicate mental weakness, not always to be interpreted as such, as ingrained timidity or bashfulness may likewise produce a baseless hang-dog manner and expression.

The loose careless way of examining soldiers in army camps I mention only to condemn. It was my misfortune to observe the habitual custom of taking temperature of all soldiers applying at the infirmary for treatment and, if found normal, they were marked for duty regardless of all subjective symptoms. This frequently later necessitated visits to tents of the unfortunates, where, upon careful examination, they were often found to be suffering from advanced pathological conditions. The

blame for such lax methods rested solely upon the officer in charge.

One of the common symptoms that confronts us today, for example, is vertigo. How can we treat this condition without making a thorough physical examination? Vertigo is the cause of much alarm to the patient and the detection of its origin in many cases is of great importance. Allow me to enumerate the numerous causes of this disagreeable condition: neurasthenia, lithemia, gastric disorders, arteriosclerosis, valvular diseases of the heart, aneurism, Meniere's disease, eye strain, epilepsy, brain tumors, abuse of tea, coffee, alcohol, and auto-intoxication. This common symptom often requires, therefore, long tedious examinations to find the cause before rational treatment can be instituted.

How many ectopic conditions could have been referred to the surgeon before a fatal rupture had occurred had the physician taken time to have made a digital examination and obtained a careful history of the individual? How many pus appendices have ruptured, requiring long tedious drainage and convalescence, when, had a thorough examination been made and diagnosis established, the surgeon might otherwise have been enabled to perform a clean operation? In other words, the failure of an early diagnosis is often due to the carelessness of the examiner or to gross ignorance.

How often do we prescribe over the telephone for a pain in the belly that often turns out to be appendicitis or serious lesions? How often do we immediatly give some hot anodyne for a terrific pain in the abdomen when palpation alone would tell us that the individual was suffering from perforated gastric or duodenal ulcer?

I desire to recite two cases in closing, demanding the importance of making a painstaking and methodical examination.

1. The first patient was a man who complained of great pain in the sacral region, this having been present for two weeks. Patient instituted self-treatment in the way of plasters and purgatives, I was called suddenly to see him in a condition of collapse in an orchard. Temperature was normal, and there was practically no other indication of his trouble. Examination of heart failed to reveal any lesions. He was advised to go home and to bed. I was called next day for same symptoms. A high digital examination of rectum encountered a hard spicule of bone which was removed with much difficulty. The spicule was barbed at one end, and its irritating position produced the reflex symptoms mentioned. The patient made a quick recovery after its removal.

2. Several years ago I was called to see a child that was crying constantly. On examination, no subjective symptoms were noted other than the crying to enable me to make a diagnosis. After looking carefully in the throat, nose and ears, palpating the abdomen, etc., I returned home, content to leave an anodyne. Being called back the next day for same symptoms, I had all the clothing removed with the intention of beginning at the top of its head and going to the bottom of its feet. A sensitive area was found over the ninth rib in mid-axillary line which the sense of touch revealed as a hard body 2½ inches long. By pressing on one end of this hard body, the skin protruded from the other end, and by pushing it through the skin surface a large darning needle was removed with the aid of a hemostat. How it got there I cannot say. There were no signs of a puncture externally. The baby ceased crying after its removal.

I mention these only to impress that a careful physical examination is due each and every individual. I believe that the human race does not complain unless there is some pathological condition existing. When your patient shows signs of multiple arthritis or multiple neuritis, do not place yourself in the embarrassing position of making a blunt diagnosis of teeth or tonsil infection; do not blurt out expression, to have your teeth pulled or your tonsils removed, for, in many instances, they may remove both sets for your inspection or inform you that they had their tonsils removed two years ago. When the poor soul comes to your office with a pain in his right side, do not immediately say, go to the hospital and have your appendix removed, for, if you take the trouble, you may find a beautiful scar that some surgeon had made in its removal years ago. When the patient is limping and his face is awry, do not send him to the shoe store for arch supports. Perhaps he has infected tonsils or his teeth are bad.

All of this is to impress upon you the importance of keeping your mouth closed unless you have had time to look the patient over before venturing a snapshot diagnosis. A careless diagnosis is much worse than a gunshot prescription. A gunshot prescription is indicative of a snapshot diagnosis.

President's Page

A Further Consideration of the Advisability of the State Society Sponsoring Some Plan of Post-Graduate or College Extension Work.

It will be recalled as announced in a previous issue of the *Medical Monthly*, that the Dean of the University, the President of the Medical College of Virginia, the Commissioner of Public Health, and the President of the Society, were appointed a committee by the Council, at its January meeting, to make further study relative to didactic lectures, demonstrations, or other means of postgraduate work, and to make recommendations.

By way of ascertaining as directly as possible the wishes of those interested, a questionnaire in the way of a referendum was sent out on May 10, to the 1,840 members of the Society, and on the evening of June 21, the committee met in Richmond to study the matter further.

A tabulation of the 393 replies received may be of interest:

To Question 1: "Do you believe that some such plan as suggested if put into execution would be of service to you?" 330 replied in the affirmative, and 63 in the negative.

To Question 2: "As a beginning would you prefer: (a) that a trial be made of arranging a *College Extension Course* after the usual plan of one or more lectures or demonstrations weekly, extending over a given period, of ten or twelve weeks; or, (b) that a trial be made of clinical demonstrations, etc., by a teacher or teachers of recognized ability, given through half day or day periods in conjunction with the meetings of your local organization?" 118 replies favored college extension courses and 253 favored instruction given as clinics, etc., in connection with the work of local organizations.

To Question 3: "Would you be willing to make an especial effort to attend clinics given within reach of you, and would you be willing to cooperate in securing cases and material for demonstrations?" 352 replied in the affirmative and 41 in the negative.

To Question 4: "Do you favor the undertaking?" 353 replied in the affirmative and 40 in the negative.

It is particularly interesting to note that of the total number, 249 of the 353 who expressed themselves as favorable to undertaking postgraduate work were from sections of the State outside the four larger cities, this due possibly to the fact that those resident in the centers have free access to staff meetings of the hospitals, etc.

After a careful consideration of the replies to the questionnaires and the numerous comments made by those replying, the feeling of the committee was that while there is an evident desire upon the part of a considerable proportion of the profession of the State for some systematic means of review and of keeping informed in current advances, the means to this end could better be accomplished by beginning with the encouragement of a preclinic day at the meetings of such local organizations as were favorable to the undertaking, particularly by arranging for a preclinic day at the coming meeting of the State Society, should the local committee feel that sufficient material could be obtained for demonstrations. It was also suggested that in the event it were found through expirement that the local organizations throughout the State, or any considerable number might so desire, that the State Society, through a committee, might to advantage act as a sort of bureau in arranging for supplying suitable clinicians for the demonstrations, etc., and in adding to arrange programs, and in correlating such programs with those of the medical institutions. In conformity with the above, the following resolutions were adopted:

1. That the University of Virginia, through its Extension Department, be requested to make a further study as to the needs and desires of the profession of the State from the standpoint of post-graduate or extension work among them, and to aid in formulating plans for meeting the needs.

2. That the Committee endorses the postgraduate clinics and demonstrations now conducted by the medical schools of the State and urges the members of the Medical Society of Virginia to patronize them.

3. The Committee recommends that the Pro-

gram Committee of the Society put on post-graduate clinics and demonstrations at its next annual meeting in Danville.

J. W. Preston, M. D.,
President, Medical Society of Va.

Roentgenology

Roentgen-Ray Diagnosis.

LEOPOLD JACHES, M. D., Radiologist, Mt. Sinai Hospital, New York City.

(*Continued from page* 208)

Diseases of the Bones.

Bone diseases can roughly be divided into three large groups: (*a*) inflammatory; (*b*) neoplastic, and (*c*) constitutional.

(*a*) The most frequent of the inflammatory diseases is osteomyelitis; next in frequency are syphilis, bone abscess and typhoid; least frequent is tuberculosis of the shaft.

Osteomyelitis is hardly ever recognized in its early stages. A septic infarct may lodge in the bone marrow and give rise to clinical symptoms, but before it has caused a perceptible macroscopic change in the bone itself the roentgenogram will not show anything at variance from the normal. Consequently, it is very important to remember that early osteomyelitis cannot be ruled out on the strength of the negative roentgenogram. As the disease progresses, its various stages are brilliantly revealed. At first there is localized widening of the transparent central area due to erosion of the corticalis. Soon the inflammatory process extends through the corticalis and causes a reaction in the periosteum, which begins to form new bone. If the process is quickly arrested, there results a thickening or sclerosis of the corticalis, possibly with a cavity in the medullary canal, which sometimes contains one or more sequestra. If the process extends, especially if it is a rapid one, the greater part or the whole of the shaft may become a sequestrum which is enveloped by the bone newly formed from the periosteum—the involucrum. The roentgen ray, better than any other means, allows the surgeon to follow this process and gives him the indications for his procedure. He can carefully watch developments and step in at the proper moment.

Syphilis generally manifests itself in the form of localized, occasionally generalized, periostitis of the shaft of the bone. When localized, it may present a uniform thickening of the corticalis and periosteum or a broken-up bony deposit, the so-called lacework periostitis. It may occur in all the long bones but is most frequent on the anterior ridge of the tibia or on the lateral surface of the distal half of the ulna. Other forms are irregular thickening with small areas of rarefaction resembling abscesses, except that the periostitis is more extensive and the rarefactions are multiple.

Another form of syphilis of the bone is gumma, which causes localized rarefaction of the bone. Its most frequent location is the humerus, where it is often discovered only after a fracture has occurred; but it may also occur in other bones. In such cases osteogenic sarcoma is generally thought of first, but a history of the previous infection, aided sometimes by a positive Wassermann reaction (the absence of which does not rule out the presence of bone syphilis), may help to make the diagnosis and prevent amputation.

Congenital syphilitic dactylitis is recognized by the cylindric mantle of periostitis that envelops the apparently normal shaft.

Syphilitic osteomyelitis is fairly common and cannot be distinguished from the pyogenic type, except that clinical symptoms are less manifest.

Bone abscess is seen as a small area of rarefaction in the corticalis of a long bone amid localized periostitis. Typhoid bone infection may involve the spine for the long bones. It is destructive at first but later causes periosteal involvement and in the long bones may resemble abscess. The history generally makes the diagnosis.

Tuberculous osteomyelitis in adults is very rare. There are few authentic cases on record in which tuberculosis was established beyond all doubt by the demonstration of the tubercle bacillus in the bone or marrow. The few reliable cases reported show a thinning of the corticalis, general haziness of bone and medullary cavity, and no periostitis. Most other cases reported as tuberculosis are, to say the least, doubtful and generally show a mixed infection.

Congenital tuberculous dactylitis causes a widening of the entire phalanx with moderate irregular bone absorption and very well defined bone structures. It has no periosteal thickening.

(*b*) Neoplasms are either benign or malignant, primary or metastatic.

Benign neoplasms are generally osteomas, exostoses, osteochondromas, enchrondromas, cysts and the giant cell tumors. Osteomas and exostoses can generally be recognized because their structure is that of the normal bone, from which they arise. They are slow growing and are mainly found on the shafts of the long bones. but near their epiphyses. Osteochondromas also generally arise from the long bones and present normal bone structure interspersed with areas of transparency—cartilage.

Enchondromas, which most frequently affect the bones of the hands and feet, are situated within the bone, causing thinning and expansion of the corticalis and disappearance of most of the normal bone, which is replaced by the radiotransparent cartilage.

Cysts expand the bone but slightly and cause thinning of the corticalis. They are homogeneously transparent and have very few, and more often no, trabeculae. They do not cause pain or enlargement of the limb and are as a rule discovered only after trauma which results in fracture.

Giant cell tumors are mentioned here because they are clinically nonmalignant and to some extent resemble bone cysts except that they are multilocular and cause greater expansion of the bone and are situated at the ends of the long bones. They rarely metastasize or recur.

Primary malignant bone neoplasms are, to the best of our present-day knowledge, the sarcomas. Carcinoma is always metastatic. Sarcoma may also be metastatic.

Sarcoma is generally a destructive lesion. No bone is safe from its attack. When periosteum is involved there will often be new but irregular bone formation along its surface. Soon the soft tissues are invaded. The periosteal thickening may be more or less uniform at first; eventually it becomes broken up and often presents characteristic lines radiating into the soft tissues and at right angles to the shaft. The bone often expands and the corticalis is destroyed. They metastasize very readily, especially into the lungs. It is imperative, therefore, to make a roentgen ray examination of the chest before any surgical procedure is undertaken.

The classification of this bone neoplasm has encountered great difficulty. During the last ten years, however, the work of the Sarcoma Registry has begun to bring order out of chaos. It would lead too far here to review its work to date. The reader is referred to two excellent monographs, one by Codman on Bone Sarcoma, published by Paul B. Hoeber, New York, and the other by Anatole Kolodny in supplement 1, *Surgery, Gynecology and Obstetrics*, 1927.

There are two main types of metastatic carcinoma, the bone productive and the bone destructive. The former may involve the entire spine, the pelvis, the humeri and femurs; it occurs most frequently secondary to carcinoma of the prostate, but has been observed also secondary to carcinoma of the breast, thyroid, lung, pharynx, skin and other organs.

The bone destructive type may involve all bones, including the skull. It is most frequent in carcinoma of the breast, thyroid, uterus and hypernephroma, but occurs also after other primary lesions. The involvement may be single or multiple; the former most frequently affects the trochanteric region of the femur, the latter may affect every bone in the body. It is a peculiar phenomenon that the greater the involvement the less malignant the course, except in hypernephroma and myeloma. There is even at least one case on record in which after all the bones of the body were riddled by the process, radiotherapy caused a recalcification of all the lesions.

One characteristic of all bone tumors is well worth remembering: they do not cross a joint.

(*c*) Constitutional or nutritional bone diseases are scurvy, rickets, osteitis deformans (Paget's disease) and osteitis fibrosa (Recklinghausen), which are fairly frequent. The rarer lesions are achondroplasia, osteogenesis imperfecta and osteomalacia. In scurvy the long bones, especially the femur and the tibia, are involved. Periostitis occurs and the epiphysial ends of the shafts are broadened out and irregular (fringy). As the disease progresses the subperiosteal hemorrhages organize, are even calcified, and cast dense shadows which are the most diagnostic marks of the disease.

Rickets presents a similar appearance, except for the absence of the periosteal lesion. In the more advanced or healed stages, the bones show marked bowing. The rickety rosary is often easily recognized by a spade-like expansion of the sternal ends of the ribs.

Paget's disease occurs most frequently in

middle or advanced age. It may involve only one bone, generally the tibia, but most often it affects the skull at a very early stage and then invades the lower spine, the pelvis, the femurs and other bones. In all the bones except the skull it is characterized by a mixture of rarefaction and sclerosis, which resembles normal bone seen through a magnifying glass slightly out of focus. In the skull there is thickening of the vertex, with numerous larger and smaller circular patches of undifferentiated calcium deposits. The base of the skull is never involved.

Osteitis fibrosa attacks the young as well as the old and is similar in appearance to Paget's disease, but affects only the long bones. There is more rarefaction, which results in a bending of the bones. It rarely invades the skull.

Achondroplasia shows shortening and broadening of the long bones.

Osteogenesis imperfecta, which occurs in young children, is characterized by atrophy and thinning of the shafts without shortening, frequently accompanied by fractures. The vertebrae flatten and height is reduced.

In osteomalacia, which is most frequent in women, there is irregular rarefaction and, because of the softening, extreme deformity.

A lesion of unknown origin which generally affects the young is a marked absorption of the patella or of the tarsal scaphoid, which heals spontaneously. It was first described by Köhler. Another lesion, also bearing his name, is partial destruction of the head of the second metatarsal bone and, to a lesser extent, of the base of the contiguous phalanx.

(To be continued.)

Miscellaneous

Contract Practice.

The following proposed draft on "Contract Practice" has been prepared by the Board of Trustees of the Richmond Acadamy of Medicine and will be presented to the general membership at its next meeting on the second Tuesday in September. We take the liberty of publishing it as it may prove of interest to other societies.

The traditional attitude of the medical profession is opposed to contract practice except when some substantial advantage to the people served by the contract arises out of it, and when this advantage is not one of reduced fees for people able to pay standard fees.

The advantages usually to be recognized as legitimate are:

(a) Prevention of disease or accident.

(b) Increased efficiency in treatment through the more ready availability of the practitioner, or his special knowledge of disease or accident likely to arise, or his familiarity with facilities provided for treatment.

(c) Protection of a party or corporation from liability to unjust claims or suits.

A practitioner who accepts a contract should be prepared to show that it accords with accepted standards of ethics, and further that legitimate advantages of the contract are not used to cloak unethical extentions of its provisions.

Except in isolated communities where it is necessary to make unusual arrangements, the family unit is not a proper object of contract.

A contract should not provide compensation below the prevailing standard of fees.

The group or party with which a practitioner enters into a contract should have some social or economic purpose resulting in a unity of living or working condition and the object of the organization should be obviously above a suspicion that medical services at reduced rates is any part of that object or purpose.

A contract tends to be relieved of suspicion of unworthy purposes in proportion as the services rendered are limited to promises where employees work, and the hospital or infirmary quarters routinely maintained to meet the needs covered by the contract.

While the principles outlined have neither the sharply defined character nor the force of a by-law, this lack is not considered material in maintaining the highest standard of ethical practice. Whatever wording is adopted in the matter of contract practice, no disciplinary action may be had against a fellow practitioner without a hearing of the evidence. The by-laws of the Academy clearly provide for procedure against a fellow deemed guilty of unethical conduct, of which an unethical contract or unethical conduct under guise of a reasonable contract, may be an instance. The responsibility rests equally upon every fellow of the Academy to bring charges of unethical conduct when it is believed that the traditional and accepted standards of the profession are being violated.

Woman's Auxiliary, Medical Society of Virginia

DOCTOR: PLEASE CALL ATTENTION OF YOUR WIFE TO THIS DEPARTMENT.

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary and Treasurer, Cottage Toll Road, R. F. D., Norfolk, Va.

Mrs. Allen H. Bunce Installed as National A. M. A. Auxiliary Head.

More than 600 women members, from all parts of the United States registered attendance upon the convention of the Woman's Auxiliary to the American Medical Association, which has units in 30 states, including a membership of 10,000 women.

Mrs. John O. McReynolds, Dallas, Texas, national president of the auxiliary, on June 12, spoke before the house of delegates of the American Medical Association. Auxiliary members felt this address to be a signal honor, since generally no outsiders are permitted at a house of delegates meeting.

The executive board of the Woman's Auxiliary, American Medical Association, met the same day at 9 A. M. at the Woman's club with Mrs. John O. McReynolds, national president, presiding. The presidents' breakfast was given in honor of the president-elect, Mrs. Alllen H. Bunce, of Atlanta, Ga., and the past presidents, Mrs. S. V. Red, of Houston, Texas; Mrs. F. P. Gengenbach and Mrs. Seale Harris.

For the Wednesday morning session at the Automobile club, termed "National Day," Mrs. McReynolds presided. Mrs. Ben Davis, president of the Minnesota State Auxiliary, gave the welcome for Minnesota, and welcomes to the Twin Cities were voiced by Mrs. H. B. Sweetser, president of the Hennepin County Auxiliary, and Mrs. A. G. Schultz, of St. Paul, president of the Ramsey County Auxiliary.

Auxiliary Work Lauded

That women have a definite effect on the administration of their community and state was pointed out by Dr. A. T. McCormack, of Louisville, Ky. "In Kentucky, counties where units of the auxiliary are organized were indispensable in a recent campaign against political exploitation of the state board of health," he said. Mrs. McCormack, wife of Dr. McCormack, is president of the Woman's Auxiliary of the Southern Medical Association.

Dr. J. O. McReynolds, of Dallas, Texas, spoke on "Friendship."

Dr. Thayer, new president of the A. M. A., told the women their first consideration should be the promotion of public health. He said the A. M. A. has done more good in bringing men together than in any other way, citing the overcoming of petty jealousies as the outstanding result of the companionship brought about through the A. M. A.

"After we become acquainted we learn that the majority of men are rather decent fellows," he said, "and we are more ready to co-operate with them." He said the auxiliary doubtless would find the same experience.

Dr. Jabez Jackson, outgoing president of the A. M. A., said one of the most essential things in the auxiliary is the quality of its leadership.

"I have absolute faith in the future of the Woman's Auxiliary," he said.

"The auxiliary is an organization centered about only one profession, and should devote its powers to projects vital to the profession and the public it serves," he declared. "Professional jealousy and mutual distrust will disappear with closer organization of members of the profession and their wives."

"Preserve the quality of your leadership and avoid entangling alliances and her future is secured," he said.

Dr. J. H. J. Upham (chairman Advisory Council), said, "the women could help by urging husbands to attend medical meetings. The effort of writing a paper does a doctor more good than hearing one read." He said, "get your husbands out of that rut."

Warned Against Propaganda

Dr. Martha Welpton, of San Diego, only woman delegate from California to the A. M. A., voiced strong opposition to the new Newton Bill providing for an appropriation of $1,000,000, about $21,000 from each state annually to be used in child welfare work "and other services."

Dr. Welpton said the new bill might be no more efficient than was the Sheppard-Towner

bill which was opposed by the Medical society on the ground that it was put out under the Department of Labor rather than under the Public Health department, and has been administered by a lay person at Washington.

Dr. Welpton made a plea for state administration of the child welfare problem, declaring that the situation is different in each state and may be better handled in that way than nationally.

In warning the women not to work for the Newton bill when it comes up in the next congress, Dr. Welpton said, "The ideas back of it are good but the whole thing is illogical."

Dr. Welpton asked the auxiliary members not to allow their organization to become the agency for a spread of propaganda, and urged that they study the legislative enactments having to do with health training and service with impartial and unsentimental minds.

"A woman cannot eat her cake and have it too," said Dr. Lulu Hunt Peters, of Los Angeles, Calif., author of the reducers' guide, "Diet and Health, a Key to the Calories," in pointing out to the members of the auxiliary Wednesday the charms of the stringent reducing regime.

Mrs. Williard Bartlett, president of the Missouri State Auxiliary, spoke on "Our Official Duties;" and Mrs. F. W. Gregor, president of the Indiana State Auxiliary on "Medical Legislation." "Fact Finding in State Medical History" was the subject of a talk by Mrs. A. R. McCormick, of Louisville, Ky.

The Woman's Auxiliary of Pittsylvania County and Danville Medical Society

Had an informal meeting at the Y. W. C. A. in Danville, on June the 13th. At this meeting, the Auxiliary had the pleasure of having with them Miss Agnes V. Edwards, secretary of the Medical Society of Virginia. Work in the local Auxiliary was discussed and also plans for the State medical convention to be held in Danville, October 16-18. Mrs. T. W. Edmunds, Danville, is president; Mrs. W. O. Emerson, Wenonda, vice-president; Mrs. Samuel Newman, Danville, secretary; and Mrs. J. J. Neal, Danville, chairman of publicity.

More Than Smiled.

Mr. Jones had recently become the father of triplets. The minister stopped him on the street to congratulate him.

"Well, Jones," he said, "I hear the Lord has smiled on you."

"Smiled at me?" replied Jones. "He laughed out loud."—(*Selected*).

The Truth About Medicine

In addition to the articles enumerated in our letter of April 28th, the following have been accepted:

H. K. Mulford Co.
  Diphtheria Toxoid—Mulford.
Parke, Davis & Co.
  Glaseptic Ampoules Solution Glucose, 50 per cent, 20 c.c.
  Glaseptic Ampoules Solution Glucose, 50 per cent, 50 c.c.
  Stearodine.
    Stearodine Tablets.
Pasteur Institute of St. Louis.
  Antirabic Virus (Semple).
G. D. Searle & Co.
  Bismuth Sodium Tartrate—Searle.
    Ampoules Bismuth Sodium Tartrate—Searle, 2 c.c.
Swan-Myers Co.
  Biennial Sage Concentrated Pollen Extract—Swan-Myers.
  Pollen Extracts—Swan-Myers 2000 unit packages.

Change of Agency.

Viking Palatable Cod Liver Oil, formerly distributed by Sigurd E. Roll, Chicago, is now distributed by Viking Health Products Co., Chicago. The Council has continued the acceptance of Viking Palatable Cod Liver Oil under the new distributor.

NEW AND NON-OFFICIAL REMEDIES

Ethylene—Cheney.—A brand of ethylene for anesthesia—N. N. R. (New and Non-official Remedies, 1928, p. 51). The Cheney Chemical Co. (Jour. A. M. A., May 5, 1928, p. 1444).

Lipiodol-Lafay.—Iodized Poppy-seed Oil, 40 per cent.—An iodine addition product of poppy-seed oil containing 39 to 41 per cent of iodine in organic combination. Lipiodol-Lafay is used as a contrast medium in myelography and pyelography, for detecting urethral strictures, in the spinal column for detecting tumors, and in other conditions for which roentgenologic exploration is desired. It is supplied in ampoules containing 1, 2, 3 and 5 c.c. respectively. E. Fougera & Co., New York.

Lipiodol Radiologique Descendant.—Iodized Poppy-seed Oil 35 per cent.—An iodine addition product of poppy-seed oil containing 34 to 36 per cent of iodine in organic combination. In subarachnoid injection for roentgenray examination, lipiodol radiologique descendant is used for the recognition of intradural tumors. E. Fougera & Co., New York.

Lipiodol Radiologique Ascendant.—Iodized Poppy-seed Oil 10 per cent.—An iodine addition product of poppy-seed oil containing 9.8 to 11.2 per cent of iodine in organic combination. In subarachnoid injection for roentgenray examination, lipiodol radiologique ascendant is used for recognition of intradural tumors when it is desired to employ a contrast medium of lesser density than that of the spinal fluid. E. Fougera & Co., New York.

Mead's Powdered Boilable Protein Milk.—A modified milk preparation having a relatively high protein content and a relatively low carbohydrate content. Each 100 Gm. contains approximately protein, 39 Gm.; butter fat, 27 Gm.; lactose, 24 Gm.; free lactic acid, 2 Gm.; ash, 6 Gm., and moisture, 2 Gm. When suitably mixed with water, powdered boilable protein milk is useful for correcting intestinal disorders of infants and children. Mead Johnson and Company, Evansville, Ind.

Antirabic Virus (Semple).—A phenol killed antirabic vaccine prepared according to the general method of David Semple (New and Non-official Remedies, 1928, p. 363). It is marketed in packages of fourteen doses, each dose consisting of 2 c.c.; all the doses are of the same potency. Pasteur Institute of St. Louis, St. Louis. (Jour. A. M. A., May 19, 1928, p. 1627).

Stearodine.—Calcium Iodostearate.—It contains from 26 to 28 per cent of iodine in organic combination. Stearodine is used as a substitute for the inorganic iodides, over which it is claimed to have an advantage in that it is longer retained and therefore better utilized. See Iodized Fats and Fatty Acids, New and Non-official Remedies, 1928, p. 212. Stearodine is also supplied in the form of tablets, each containing stearodine, equivalent to 0.01 Gm. of iodine. Parke, Davis & Co., Detroit. (Jour. A. M. A., May 26, 1928, p. 1711).

Book Announcements

Operative Surgery. By J. SHELTON HORSLEY, M. D., F. A. C. S., Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va. Third Edition. St. Louis. The C. V. Mosby Company. 1928. Octavo of 893 pages, with 756 Original Illustrations by MISS HELEN LORRAINE. Cloth. Price, $15.00.

Modern Methods of Treatment. By LOGAN CLENDENING, M. D., Associate Professor of Medicine, Lecturer on Therapeutics, Medical Department of the University of Kansas. With Chapters on Special Subjects by H. C. Anderson, M. D.; J. B. Cowherd, M. D.; H. P. Kuhn, M. D.; Carl O. Rickter, M. G.; F. C. Neff, M. D.; E. H. Skinner, M. D.; and E. R. DeWeese, M. D. Second Edition. St. Louis. The C. V. Mosby Company. 1928. Octavo of 815 pages with a number of illustrations. Cloth. Price, $10.00.

Syphilis. A Treatise on Etiology, Pathology, Symptomatology, Diagnosis, Prognosis, Prophylaxis, and Treatment. By HENRY H. HAZEN, A. M., M. D., Professor of Dermatology and Syphilology, Medical Department of Georgetown University, and in the Medical Department of Howard University; Author of "Diseases of the Skin"; "Cancer of the Skin", etc. Second Edition. St. Louis. The C. V. Mosby Company. 1928. Octavo of 643 pages with 165 illustrations including 16 Figures in Colors. Cloth. Price, $10.00.

A Handbook of Clinical Gynecology and Obstetrics. By RAE THORNTON LA VAKE, M. D., F. A. C. S., Assistant Professor of Obstetrics and Gynecology, University of Minnesota; Clinician in Charge of the Obstetric and Gynecologic Department of the University of Minnesota Dispensary. St. Louis. The C. V. Mosby Company. 1928. Octavo of 281 pages. Illustrated. Cloth. Price, $4.00.

The Duodenum. Medical, Radiologic and Surgical Studies. By PIERRE DUVAL, JEAN CHARLES ROUX, and HENRI BECLERE, of the Surgical Clinic, Faculty of Medicine, Paris. Translated by E. P. QUAIN, M. D. St. Louis. The C. V. Mosby Company. 1928. Octavo of 212 pages, with a number of illustrations. Cloth. Price, $5.00.

New and Nonofficial Remedies, 1928, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1928. Cloth. Price, postpaid, $1.50. Pp. 489 XLIX. Chicago. American Medical Association.

This book is the work of the Council on Pharmacy and Chemistry of the American Medical Association. For some twenty years the Council's plan has been the publication annually of a book containing descriptions of those unofficial preparations which, after careful investigation, have been found worthy of recognition and consideration by the medical profession.

The book is conveniently arranged for reference: each preparation is classified, and each classification is preceded by an authoritative and up to date discussion of the composition, actions, uses, and dosage of the medicament involved. Products that have been admitted are re-examined at stated intervals to determine if they are keeping their promise of therapeutic usefulness; and new products are admitted as they are found acceptable.

On account of the careful revision and the current additions, New and Non-official Remedies is essentially a new book each year, indispensable to the physician who would keep up with the march of therapeutic progress.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1927. Cloth. Price, postpaid, $1.00. Pp. 103. Chicago: American Medical Association, 1928.

The Council on Pharmacy and Chemistry of the American Medical Association annually publishes the reports which tell the reasons for non-acceptance of those products which during the year it has found unworthy of recognition. Some of these reports have been published in abstract in *The Journal;* all are contained in full in this volume.

A glance at the index shows, however, that these reports do not always deal with articles that have been actually rejected by the Council. Preliminary reports are frequently made on new products which appear promising but for which there is not yet sufficient evidence to warrant inclusion in New and Non-official Remedies.

The Health and Happiness Series. A Series of Health Education Books Designed for Use in the Elementary Schools. By S. WEIR NEWMAYER, A. M., M. D., Supervisor of Medical Inspection of Public Schools, Philadelphia, and EDWIN C. BROOME, Ph.D., LL.D., Superintendent of Schools, Philadelphia. American Book Company. New York, Cincinnati, Chicago, Boston, and Atlanta. 12mo. Cloth.

The Play Road to Health. 144 pages.
Health Habits. 207 pages.
The Way to Keep Well. 264 pages.
The Human Body and its Care. 314 pages.

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Editorial

Post-Graduate Study.

The action of the Committee on Post-Graduate Study, as set forth by Dr. J. W. Preston, on the PRESIDENT'S PAGE, this issue, will be read with interest by members of the Medical Society of Virginia. Analysis of the questionnaire indicated the thought of members on this question. The busy practitioner is ever eager to review clinical material, to discuss diagnoses, to attend upon the considerations of treatment, and to renew acquaintance with current medical publications touching upon a survey of the diseases under consideration.

A clinic day before or during the sessions of assembled medical gatherings offers the most feasible plan for bringing about this desirable experience meeting and medical study of cases. And it argurs well that a start will be made in this direction at our Danville meeting in October, when an attempt will be made to bring together, in an orderly program, a group of patients with demonstrators or leaders. In this way a start may be made on the plan for post-graduate study in Virginia.

In the meantime, it is hoped a more extended and thorough inquiry will be instituted into the whole problem of post-graduate study in this State, under the auspices of the Extension Department of the University of Virginia. From this, it is believed a more accurate and complete plan may be devised for carrying forward any worth while plan.

Members of the Society are urged to arrange to attend the first day features of the Clinic Day, Tuesday, of the Danville meeting. Announcement of the order, place, and time of clinics will be made later.

The Harvey Tercentenary.

DISCOVERY OF THE CIRCULATION OF THE BLOOD.

Three hundred years ago William Harvey published his celebrated work, "Excitatio Anatomica de Motu Cordis et Sanguinis in Animalibus." After twelve years of investigation and the delivery of medical lectures describing his experiments and observations upon the subject of the circulation of the blood, this young English physician published this book, which revolutionized medicine of that day and formed the foundation of modern physiology.

This epochal event in medical history was fittingly celebrated recently in London.* under the auspices of the Royal College of Physicians.

In contemplating the work of William Harvey, it is interesting to note that, from the time of Galen, for a period of fourteen centuries, medicine was ignorant of the essential facts of heart action and blood circulation. The writings of Galen had formed the basis of medical knowledge during these dark centuries and it was with diffidence and trepidation that this investigator in anatomy in the seventeenth century turned from the old masters and wrote this new page in medical knowledge.

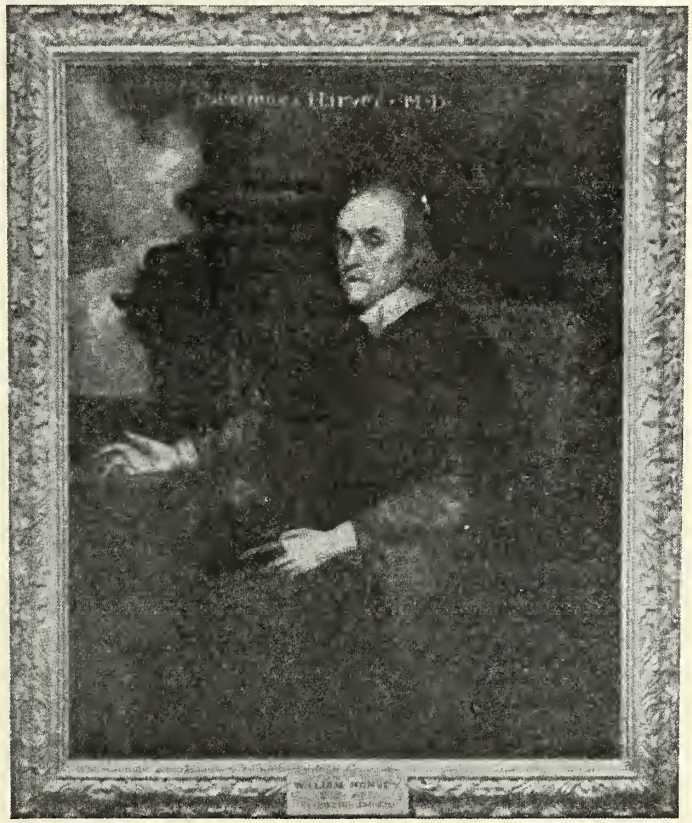
Vesalius, in 1542, had been bold enough to deny the existence of pores in the septum of the heart, and Realdo Columbus (1559), while denying the muscularity of the heart, had contended that the blood, and "spirits" passed from the right to the left ventricle, thus first describing what was afterward known to be the pulmonary circulation.

These predecessors of Harvey, at that ancient school of medicine, Padua, where Harvey, as a young man, studied anatomy, were themselves unaware of the reality of the circulation of blood. But Cannani had discovered the valves of the veins and Fabricus had published excellent drawings of this anatomical finding. The meaning, however, of the veins was not understood by these teachers of Harvey. The riddle of isolated anatomical findings in which William Harvey worked

*Described in detail in The British Medical Journal, May 19 and 26, 1928.

confused but stimulated his inquiring mind. Harvey pushed on in his experiments and dissections for years following his return to England, where he practiced for many years. Here Harvey finally completed his studies and published his contribution. But it should be remembered that even up to the time of his death, he did not know how the blood passes from arteries to veins, through capillaries. For it was four years after Harvey's death that Marcello Malpighi (1661) demonstrated, by means of an improved magnifying glass, the passage of blood through capillaries, from arteries to veins.

Harvey's monograph, describing his series of observations and experiments, as a literary and scientific work, is worthy of the international celebration that its three hundredth anniversary has occasioned. It may be read and reread, today, as a work of first moment, because of its literary excellence, its scientific method, and its famous discovery.



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WILLIAM HARVEY, 1578-1657.
From the portrait by Cornelius Jansen belonging to the Royal College of Physicians of London.

Harvey's work among other things showed the following startling physiological and anatomical discoveries:

(1) That the heart contracts and that this coincides with the pulse.

(2) That the pulse is produced by the muscular contraction of the heart and the expulsion of blood into the arteries.

(3) That there are no "pores" in the septum, that the whole blood from the right ventricle is sent through the lungs to the left side of the heart, and that the whole blood in the left side is sent through the body.

(4) That the blood in the arteries and veins is the same blood.

William Harvey

William Harvey (1578-1657) was an English physician, and, as the discoverer of circulation of the blood, deserves highest of praise as the father of modern physiology and scientific medicine. He was born at Folkestone, England, April 1st, 1578. He studied in a grammar school at Canterbury and at sixteen went to Cambridge; at nineteen, taking his B. A. degree. Afterward he went to the University of Padua, Italy, studying at this celebrated school of medicine under Fabricus and Casserius, distinguished anatomists. At twenty-four, Harvey graduated in medicine here and returned to England, settling in London to practice. He married the daughter of Dr. Lancelot Browne, physician to Queen Elizabeth. In July, 1607, Harvey was admitted to the Royal College of Physicians, and in 1609 was made physician to St. Bartholomew's hospital. Harvey was censor of the college and in 1615 was appointed Lumleian lecturer. In his course of lectures, beginning in 1616, he first brought forward his observations upon the movements of the heart and blood.

In 1618 he was made physician extraordinary to King James I. In 1628, after twelve years of study and writing, his celebrated

monograph on the movement of heart and blood was published. Following this Harvey traveled in Europe, with the royal family.

In 1636, after returning to London, he accompanied Charles I to Scotland. While in Edinburgh, when the king was occupied in discussing matters of state and church, Harvey made his observations at Bass Rock on generation and wrote his remarkable treatise, entitled "De Generatione."

Harvey was with the royal army under Charles I at Edgehill (October, 1642), where the issue was indecisive. After this Harvey went to Oxford and remained there for three years. While with Charles at Oxford, he was made Warden of Merton College. In 1646, when the city surrendered to Cromwellian forces, Harvey returned to London to find that his lodgings at Whitehall had been searched and valuable manuscripts and anatomical preparations had been seized. At sixty-eight years of age, he relinquished all professional duties, but he lived to be eighty years of age.

In person, William Harvey was not tall "but of the lowest stature, round faced, alabaster complexion, little eyes, round, very black, full of spirits, his hair black as a raven, but quite white twenty years before his death." A portrait of Harvey is now hanging in the library of the Royal College of Physicians, in London. It is by Cornelius Jansen. Harvey is represented as seated in large chair by a table, on which is observed a number of books.

The Recent Harvey Tercentenary Celebrations in London.

Delegates, representing universities and medical societies throughout the world, convened in London for the purpose of commemorating the three hundredth anniversary of the publication of the discovery of the circulation of the blood, as announced by William Harvey in his famous scientific classic. This great occasion was arranged by that ancient and distinguished body of scientists—the Royal College of Physicians of London.

The initial ceremony of the series of conventions of the Harvey Tercentenary was a reception of the delegates, numbering one hundred, by King George VI, at Buckingham Palace, on Monday, May 14th, last. The delegates were presented to His Majesty by Sir John Rose Bradford, K. C. M. G., F. R. S., President of the College.

The President made an address to the King, in which he called attention to the association of William Harvey with one of his predecessors on the throne of England, King Charles I, to whom Harvey's "De Motu Cordis" was dedicated. Mention was made of the attachment of King Charles I, as well as King James I, for Harvey, and of the material assistance given him by these sovereigns, while he was making investigations upon living animals in search of evidence with which to prove the circulation of the blood.

The King's reply was impressive, in that it expressed hearty sympathy with the importance and dignity of the celebrations about to be instituted in memory and honor of so distinguished a physician as Harvey, who had contributed so much to the store of human knowledge, and to the advancement of medical science. The King expressed pride in partaking in the exercises that would honor one who had been so intimately identified with England and with English science.

Following this came the reception of delegates and appropriate exercises in honor of Harvey by the Royal College of Physicians. Adorned in the habiliments of academic dress, distinguished scientists and delegates to the Tercentenary, foregathered in the library of the Royal College of Physicians, on the afternoon of May 14th, to witness the admission of the Honorary Fellows, Earl of Balfour, Sir Ernest Rutherford, Professor I. P. Pavlov, and Professor K. F. Wenckeback, and to hear the three eulogies upon Harvey's life and work by three distinguished visitors: first by Sir Charles Sherrington, second by a French physician, Professor A. Chaufford, and third, by a German anatomist, Professor Keibel.

On Wednesday evening, May 16th, the Harveian celebrations were brought to a close by a banquet and reception in London, at Guildhall. Nearly five hundred fellows and guests assembled in the art gallery and proceeded to seats at tables in the great hall. That was a distinguished gathering: the German, French, Italian, Belgian, Austrian, Greek, Finish ambassadors and ministers; Minister of Health of England, Secretary of Scotland, Archbishop of York, Archbishop of Wales; Dean of Westminster, Dean of St. Paul's; Cardinals and Rabbis; the Lord Chancellor; representatives from faculties of Universities of London and Edinburgh, Oxford and Cambridge; physicians and surgeons, including

Lord Dawson, of Peru, Sir Berkeley Moynihan, Sir James Perry and many others were present. After toasts were proposed and drank to the memory of William Harvey, three eulogies were pronounced upon the career of Harvey—an eminent scholar, physician, and research worker. The Minister of Health in England responded and drew attention to the greatness of the occasion which brought together so distinguished a body of men as were come to the British Isle for the purpose of honoring Harvey. Comment was made upon the remarkable fact that one of the delegates present was Professor Castiglioni, representing the University of Padua, where Harvey, over three hundred years ago, had studied anatomy and received his medical education.

Professor A. Castiglioni, of the University of Padua, in the Venetian domains, spoke of the freedom and encouragement which that institution had always enjoyed in the domain of anatomical research. Padua was the center of anatomical research in Europe for generations. Italy could point with pride to distinguished anatomists with whom Harvey worked and on whose work Harvey relied for data in making his epochal discovery in the movements of the heart and blood.

Finally, Professor W. H. Welch, of Johns Hopkins University, spoke and was stirred by thoughts of being present on an event of unexampled importance in the history of human thought. Dr. Welch was appreciative of the great occasion, of the striking and laudatory celebrations and receptions, and eulogies which he had witnessed in commemoration and in honor of one of the world's foremost men of science.

News Notes

University of Virginia, Department of Medicine has Finals.

Commencement exercises of the Medical Department of the University of Virginia were held June 10, 11 and 12, in conjunction with those of the other schools. Before the close of the exercises, President Alderman announced the creation of a trust fund totaling considerably in excess of $5,000,000 for the benefit of the University of Virginia. He stated that this gift was made by a loyal and devoted alumnus of the University, but the name of the donor and the plans and purposes of developments made possible by the gift are withheld for the present. The usual social features and class exercises were held and 304 graduates in the various schools were awarded diplomas; fifty-five of these were in the school of medicine. Graduates of this department represented eleven states and one foreign country.

Those receiving diplomas in medicine are listed below with their hospital appointments:

University of Virginia Hospital, University, Va.—Dr. Calvin Thomas Burton, Whitmell, Va.; Dr. Elizabeth Cocke Cole, Norfolk, Va.; Dr. Carson Lee Fifer, Wyoming, Del.; Dr. Edwin C. Hamblen, Greenville, Miss.; Dr. Hubert B. Holsinger, McGaheysville, Va.; Dr. Virgil L. Kelly, Jr., Oceana, W. Va.; Dr. Robert L. King, Pearisburg, Va.; Dr. Patrick Pih-Tsang Wu, Shanghai, China.

Barnes Hospial, St. Louis, Mo.—Dr. James Robert Adams, Charlottesville, Va.

Mason Clinic, Seattle, Wash.—Dr. Joel Wilson Baker, Roanoke, Va.; Dr. Louis Henry Edmunds, Halifax, Va.; Dr. John Norman Wilkinson, Gulfport, Miss.

Memorial Hospital, Richmond, Va.—Dr. Rufus Brittain, Tazewell, Va., and Dr. Douglas D. Vance, Bristol, Tenn.

Vanderbilt Hospital, Nashville, Tenn.—Dr. John Alfred Calhoun, Jr., Ensley, Ala.

Roosevelt Hospital, New York, N. Y.—Dr. Paul Douglas Camp, Jr., Franklin, Va.

T. C. and I. Hospital, Birmingham, Ala.—Dr. Willis Frank Cotton, McComb, Miss.

Germantown Hospital, Philadelphia, Pa.—Dr. John Henry Coulter, Jr., LaCrosse, Va.

Wyckoff Heights Hospital, Brooklyn, N. Y.—Dr. John E. Cox, Falkner, Miss.

Florence Infirmary, Florence, S. C.—Dr. Albert M. Eaddy, Johnsonville, S. C.

Lincoln Hospital, New York, N. Y.—Dr. Daniel Fallis, Brooklyn, N. Y.

Presbyterian Hospital, New York, N. Y.—Dr. Loren Pritchard Guy, Norfolk, Va.

Charleston General Hospital, Charleston, W. Va.—Dr. Edward Buchanan Holmes, North Holston, Va.

Massachusetts General Hospital, Boston, Mass.—Drs. William R. Jordan, Richmond, Va., and James Winston Watts, II, Lynchbur, Va.

Lenox Hill Hospital, New York.—Dr. Paul Kass, Houston, Texas.

University Hospital, Ann Arbor, Mich.—Dr. William Louis Lacy, Culpeper, Va.

Coney Island Hospital, Brooklyn, N. Y.—Dr. Max Landman, New York, N. Y.

Vasser Brothers Hospital, Poughkeepsie, N. Y.—Dr. Ford K. Lucas, East Radford, Va.

Protestant Hospital, Norfolk, Va.—Dr. Paul McFarlane, Scottsville, Va.

New York Post-Graduate Hospital, New York, N. Y.—Dr. John Braxton McKee, Saltville, Va.

Bushwick Hospital, Brooklyn, N. Y.—Dr. Vincent G. Maggiore, Brooklyn, N. Y.

St. Vincent's Hospital, Norfolk, Va.—Dr. Vincent J. Meads, Portsmouth, Va., and Dr. David S. Phlegar, Jr., Christiansburg, Va.

Binghamton State Hospital, Binghamton, N. Y.—Dr. Oscar N. Morison, Christiansburg, Va.

Newell Sanitarium, Chattanooga, Tenn.—Dr. Cecil Edward Newell, Chattanooga, Tenn.

Cleveland City Hospital, Cleveland, Ohio.—Dr. Chester Reeves Nuckolls, Hillsville, Va.

Kings County Hospital, Brooklyn, N. Y.—Dr. Valentine Lawrence Puig, Jr., Laredo, Texas.

Sydenham Hospital, New York, N. Y.—Dr. Milton E. Robbins, Miami, Fla.

Lebanon Hospital, New York, N. Y.—Dr. Herman G. Rose, New York, N. Y.

St. John's Hospital, Long Island, N. Y.—Dr. Harry John Secky, Astoria, N. Y.

Bronx General Hospital, New York, N. Y.—Dr. Morris Spindel, New York, N. Y.

United States Navy — Dr. Charles B. Stringfellow, University, Va., and Dr. Emory Ewing Walter, Chattanooga, Tenn.

Barnert Hospital, Passaic, N. J.—Dr. George M. Stroll, Brooklyn, N. Y.

Garfield Hospital, Washington, D. C.—Dr. Frank E. Tappan, Berryville, Va.

U. S. Public Health Service, Washington, D. C.—Dr. Frank F. Thweatt, Jr., Petersburg, Va.

Lucas County Hospital, Toledo, Ohio.—Dr. Charles Edward Watson, Jr., Kipling, N. C.

Philadelphia Jewish Hospital, Philadelphia, Pa.—Dr. Jacob Wilkins, Richmond, Va.

Blue Ridge Sanatorium, Sanatorium, Va.—Dr. Thomas Epps Wilson, Jr., Clinton, Miss.

Cincinnati General Hospital, Cincinnati, Ohio.—Dr. John F. Woodward, Jr., Norfolk, Va.

Unity Hospital, Brooklyn, N. Y.—Dr. Max Yacht, Brooklyn, N. Y.

Instructor in Pathology, University, Va.—Dr. Joseph B. Graham, Talladega, Ala.

Dr. Walter Jackson Lackey, Fallston, N. C. and Dr. Frank Coulson Pinkerton, University, Va., were also members of the graduating class.

Our Danville Meeting.

Plans are progressing splendidly for the fifty-ninth annual meeting of the Medical Society of Virginia, to be held in Danville, October 16, 17 and 18, under the presidency of Dr. J. W. Preston, of Roanoke. In addition to the three invited guests previously named—Dr. E. Starr Judd, of Rochester, Minn.; Dr. Dean Lewis, of Baltimore, and Dr. Seale Harris, of Birmingham, Ala.—Dr. Morris Fishbein, editor of *The Journal of the American Medical Association*, has accepted an invitation to address one of our general meetings and also the House of Delegates. Dr. Fishbein will also speak before the Woman's Auxiliary. Arrangements are being made to have clinics on the first day for those who may not care to enter the golf tournament. These, together with the meeting of the House of Delegates and renewing old friendships, will furnish diversion a plenty for those who come early. All of the hotels and meeting halls are close together. While in this day of automobiles, it is impossible to secure special railroad rates on the certificate plan, for those coming by rail, round trip rates of once and a half the straight fare are sold over the Southern Railroad for distances of less than 150 miles, these good for five days.

The Woman's Auxiliary will look out for the ladies accompanying the members, so all doctors are requested to bring their wives and make this a real vacation.

The Norfolk County Medical Society,

At its meeting on June the 4th, elected the following officers for the ensuing year: President, Dr. James H. Culpepper, Norfolk (by acclamation); vice-president, Dr. C. Lydon Harrell, Norfolk; and secretary-treasurer, Dr. Lockburn B. Scott (re-elected), Norfolk. Delegates were also named to represent the Society at the Danville meeting of the Medical Society of Virginia.

Vacation Time is Here.

The season selected by most people for vacations is here and the woods and the trees and the rivers are calling every one—high and low, rich and poor. So why should not the doctor heed the call and take the vacation he recommends for his clientele?

Edgar Guest has expressed so well the need for a vacation in his verses entitled "Tired," that we take the liberty of reproducing them with the hope that our readers will heed the warning before reaching the "breaking" point:

TIRED

When the jests of your friends seem stale, and the shout of your boy torments,
You are tired, old man, and you ought to get out of your world of dollars and cents.

When censure is quick on your tongue and you rage over trifles small,
When you don't hear one-half that is said, and you don't seem yourself at all;

When you haven't an ache or a pain, yet you jump at the slightest sound.
It isn't a doctor you want to see, but it's ocean and sky and ground.

Your body is hale, but your soul is sick and cramped in its house of clay
And it wants to be freed from dollars and cents to drift with its dreams away.

Oh you may breathe in the city air, and barter your strength for a goal.
But the break will come if you pay no heed to the cry of your shackled soul.

The American Psychiatric Association,

At its annual meeting recently, held in Minneapolis, elected Dr. Samuel T. Orton, of Columbus, Ohio, president. Dr. Earl D. Bond, of Philadelphia, was elected vice-president, and Dr. Clarence O. Cheney, Poughkeepsie, N. Y., secretary. Atlanta, Ga., was selected as the 1929 place of meeting.

The 1927 Christmas Seal Sale is Virginia's Largest.

Belated returns from sales of the Christmas seals in Virginia have brought the total to $62,970.04, the largest sale Virginia has ever had from these seals. This amount passed 1926—the previous record year—by $5,619.90.

Dr. and Mrs. G. W. Young

And son, James, of Pennington Gap, Va., left early in June for an automobile trip through Texas, New Mexico, and California. While on this trip, they visited Dr. Young's mother at Albuquerque. They have just returned home.

Dr. and Mrs. E. C. Levy,

After several years in Tampa, Fla., have returned to Richmond, Va., and are located at 1652 West Grace Street. Dr. Levy re-organized the health department of Tampa and was in charge of the health work in that city until a political change was made in the government of the city, which gave the position to a local doctor.

Dr. T. Duckett Jones

Of the class of '23, University of Virginia, Department of Medicine, son of Dr. and Mrs. J. Bolling Jones, of Petersburg, Va., is returning to the States the first of September after spending the past year studying in the Cardiac Department of the University Hospital College of Medicine, under Sir Thomas Lewis. He has visited Copenhagen and several places in Germany while abroad. Dr. Jones will be located at the House of the Good Samaritan, in Boston, Mass., upon his return.

Mr. Straus Will do Private Laboratory Work.

Aubrey H. Straus, who has recently resigned as director of laboratories for the State and City Health Departments, will go into private laboratory work next September, at 613 West Grace Street, Richmond, Virginia. Mr. Straus will be consulting bacteriologist to St. Elizabeth's Hospital and expects to spend a considerable portion of his time in research work for the hospital. The work of his laboratory will be limited exclusively to bacteriology.

Besides all types of medical bacteriology Mr. Straus will do some industrial work acting as consulting bacteriologist to the Virginia Dairy, Richmond Ice Company, and other industries.

Mr. Straus has also just been appointed instructor in biology in the Richmond Extension Division of the College of William and Mary for the session beginning in September.

Dr. William C. Holt,

Of the class of '26, University of Virginia, and recently located there, has gone to Dallas, Texas, where he will be connected with the Parkland Hospital.

The Interstate Post-Graduate Medical Association of North America

Will meet in Atlanta, Ga., October the 12th-19th, for the first time in the South. Dr. George W. Crile, Cleveland, is chairman of the Program Committee, and he announces that eighty-two renowned clinicians and teachers from all sections of the United States and Canada have already accepted places on the

program. Clinics will commence at 7 A. M. and last until 10 P. M., with two intermissions. All medical men in good standing in their county, state and national organizations are invited to attend. There is a registration fee of $5.00.

The National Tuberculosis Association

Held its annual meeting in Portland, Ore., June 20-23. This was attended by the secretaries of Tuberculosis Associations in twenty-seven states as well as by more than 350 tuberculosis workers from various sections of the United States. Miss Leslie C. Foster, executive secretary of the Virginia Tuberculosis Association, represented this state. Figures from the thirty largest cities in the country showed that the 1927 mortality from tuberculosis set a new low rate and marked a greater percentage of decline than any other recent year.

Dr. Walter L. Rathbun, of Fredonia, N. Y., was elected president of the National Association for the coming year. Dr. William F. Drewry, president of the Virginia Tuberculosis Association, was elected a member of the board of directors of the National Association.

Dr. and Mrs. H. Stuart MacLean,

Richmond, Va., left early in June for Montreal, Canada, from which place they sailed for England. After a visit to Mrs. MacLean's people in England, they will motor through Scotland before returning home.

Dr. Warren T. Vaughan,

Richmond, Va., was elected secretary of the American Association for the Study of Allergy at the meeting of that Society held in Minneapolis just prior to the meeting of the American Medical Association.

Dr. C. W. Trexler,

Of the class of '26, University of Virginia, recently located in San Diego, California, has accepted the position as surgeon on the staff of the Samuel Mahelona Hospital, in Kealia, Kauai, Hawaii.

Child Welfare in the Philippines.

In 1926 there were 329 child-welfare centers in the Philippines, fully half of which had physicians and nurses in attendance at the end of the year, while 32 others employed trained and supervised midwives. At these centers, reports the commissioner of child welfare of the Islands, examinations and advice are given to expectant mothers and to mothers with young children, while midwives are also invited to come for instruction.

Married.

Dr. Peter Boothe Pulman, Alexandria, Va., of George Washington University, class of '26, and Miss Carolyn Burgess, Reva, Va., June 23.

Dr. George Colbert Tyler, Newport News, Va., and Miss Hilda Margaret Lankford, Morattico, Va., June 20.

Dr. James Reginald Bailey, Keysville, Va., and Miss Marguerite Stephenson, Littleton, Va., June 23.

Dr. James M. Spencer and Miss Nellie Tickle, both of Roanoke, Va., June 18.

Dr. Paul Ellis Prillaman, of the class of '27, Medical College of Virginia and interne at St. Elizabeth's Hospital, Richmond, for the past year, and Miss Sally Doriot Haller, of Wytheville, Va., June 11.

Dr. George Wasko Surgent, of the class of '27, University of Virginia, Department of Medicine, and Miss Ida May Hicks, Crozet, Va., June 16. Dr. Surgent has just completed an internship at the University of Virginia Hospital and will now be located at Blue Ridge Sanatorium, Va.

Dr. John Melvin Crymes, of the class of '26, Medical College of Virginia, and Miss Ruth E. Staude, Richmond, Va., June 6. They will make their home in Lawrenceville, Va.

Dr. Raymond Evan Bailey, of the class of '27, Medical College of Virginia and for the past year at the C. & O. Hospital, Huntington, W. Va., and Miss Ellen Seay, of Richmond, June 30. They expect to make their home in Hamlin, W. Va.

Dr. Edward Newton Pleasants, also of the class of '27, Medical College of Virginia, recently at Stuart Circle Hospital, Richmond, and Miss Rose Lillian Fore, of Pamplin, Va., June 23.

Dr. John Wesley Parker, Jr., formerly of Emporia, Va., but now of Seaboard, N. C., and Miss Josephine Ballou Dixon, formerly of Winston-Salem, N. C. In Richmond, June 27. Dr. Parker is an alumnus of the Medical College of Virginia in the class of '27.

Dr. Judson Tomkies Vaughan, of Richmond, Va., and Miss Alice Louise Gordon, Ashland, Va., June 27. Dr. Vaughan is an alumnus of the Medical College of Virginia, of the class of '27.

Dr. Rufus H. Reitzel, Siler City, N. C., of this year's class, Medical College of Virginia, and interne at Memorial Hospital, Richmond,

for the coming year, and Miss Jessie James, Richmond, March 10.

Dr. Joseph Brown Graham, Talladega, Ala., of the class of '28, University of Virginia, School of Medicine, and Miss Ivy Louise Logan, Centerville, Ala., recently.

Dr. Walter Reuben Gladding, Cape Charles, Va., and Miss Dorothy Hardy Peple, Richmond, Va., June 7. Dr. Gladding graduated from Medical College of Virginia this June and will be an interne at Emergency Hospital, Washington, D. C., for the coming year.

Cuba to Have a Junior Red Cross.

Plans have been made for the organization of a Junior Red Cross society in Cuba with a chapter in every school of the island. The new organization will work for the establishment of children's libraries, playgrounds, school lunch rooms, dispensaries, health centers, vacation camps, and other activities for the welfare of children.

Let There be Light.

The annual report of the National Society for the Prevention of Blindness now being sent members shows a wonderful amount of work accomplished by that Society since its inception twenty years ago. The greatest single achievement is shown to be in the field of ophthalmia neonatorum. The frequency of this disease as a cause of blindness has diminished each year until it is now 64 per cent less than in 1908. Complete eradication of this source of blindness—once the most prolific of all causes—is said to be scientifically possible.

The report states that the Society is helping to safeguard the eyes of the next generation, by following up its work for prevention of blindness at birth with demonstrations of preschool eye tests, preschool clinics, and co-operation in the establishment of sight saving classes for the education of children with seriously defective vision. Using a recently perfected technique, it is now possible to test with some accuracy the vision of children too young to read letters on charts used for adults and, in many cases, conditions requiring immediate attention have been discovered and remedied.

Special "Sight Saving Classes" in public schools, first advocated by the Society in 1911, have been established in eighty cities in eighteen states, there now being 292 such classes. From October, 1926 to December, 1927 alone, more than 80,000 miles were traveled by members of the Society's staff over the United States, Canada and Great Britain.

Hope is expressed that research work in trachoma may soon help in solving the mystery of that disease which has been one of the greatest international sources of blindness.

Eye hazards of industrial occupations have been receiving much attention from the Society and during the past year that organization has brought the essential facts concerning eye hygiene, the prevention of accidental injury to the eyes, and the importance of good lighting before approximately 3,000,000 men and women engaged in the most hazardous industries.

On Staff of Gill Memorial E. E. & T. Hospital.

Dr. H. D. Scarney, formerly of the School of Ophthalmology of Harvard University and the Massachusetts Eye and Ear Infirmary, Boston, Mass., is now a member of the staff of the Gill Memorial Eye, Ear and Throat Hospital.

American Medical Association.

At the seventy-ninth annual session of the Association in Minneapolis, the middle of June, there was a registered attendance of 4,876 members. We regret that our own State had such a small representation, only seventeen having registered attendance. Virginia was represented in the House of Delegates by Drs. Southgate Leigh and J. W. Preston, duly appointed delegates, and Dr. Ennion G. Williams alternate for Dr. Murat Willis.

Dr. Malcolm L. Harris, Chicago, chairman of the Judicial Council of the American Medical Association, was elected President-Elect. Dr. W. S. Thayer, Baltimore, Md., is president. Portland, Ore., was selected as the 1929 place of meeting.

New Professors at University of Virginia.

Dr. Edwin P. Lehman, of Washington University, St. Louis, Mo., has been elected professor of surgery and gynecology at the University of Virginia, to succeed Dr. Stephen H. Watts who has retired from active teaching.

Dr. Sidney William Britton, of Johns Hopkins University, will become professor of physiology, succeeding Dr. Homer W. Smith, who has resigned to become professor of physiology at New York University.

Dr. J. T. N. McCastor,

Recently at Central State Hospital, Petersburg, Va., has gone to New York City, where he is assistant physician and graduate interne for outside maternity work at the John Ber-

wind Maternity Hospital, at 125 East 103rd St.

Another Hospital for Richmond.

A number of Richmond doctors have secured a charter to erect a hospital, to be known as the Henry-Franklin Hospital, at the corner of Henry and Franklin Streets, Richmond, Va. Dr. A. L. Herring is president of the corporation and Dr. T. B. Pearman secretary. Other officers are Drs. T. B. Weatherly, J. A. Rollings and Campbell Harris. The proposed hospital is to have about seventy-five beds and all modern facilities and offices for sixteen doctors and dentists. There will also be a roof garden and sun parlors for convalescent patients and special obstetrical and children's departments. Plans have been prepared and it is expected that work will be commenced very shortly with a view to having the hospital ready for occupancy in the Fall.

Dr. Alexander McLeod,

Glen Allen, Va., is at present in U. S. Hospital, No. 60, Oteen, N. C.

Dr. W. J. Sturgis,

For some time at Franktown, Va., is now located at Nassawadox, Va.

Professor of Preventive Medicine.

Dr. Fred J. Wampler, recently director of the Accomac-Northampton County Health Unit, has been appointed professor of preventive medicine, assistant professor of medicine in charge of laboratory diagnosis, and director of the out-patient department, at the Medical College of Virginia, Richmond, the appointment taking effect July 1, 1928.

The Shrine's Work for Crippled Children.

The Imperial Council of the Shrine of North America is now operating 10 hospitals for crippled children in widely scattered sections of the country, besides 5 mobile units, with 700 beds available. During a recent fiscal year 2,574 patients were received, and 2,393 were discharged as cured or benefited, but the names of 1,700 more crippled children eligible for treatment were on the waiting list. Three more hospitals are to be built, as soon as funds are available, in Richmond, Pittsburgh, and central or western New York.

Sun Suits for Children.

The Bureau of Home Economics of the U. S. Department of Agriculture has recently issued a leaflet which gives directions for making "sun suits" for little children. These suits are made of such fabrics and patterns that the wearers may take their sun baths during their regular play time. They leave the neck, arms, and lower legs completely exposed; fancy, open-woven cotton fabrics are recommended for the waists, and a more substantial and opaque but light and loosely woven material for the panties or skirts. The leaflet can be secured from the Government Printing Office, Washington, D. C., at 5 cents per copy.

Dr. H. A. Dalton

Has moved from Galax, Va., to Hillsville, Route 4, Va.

Heads Health Authorities.

Dr. Matthias Nicoll, Jr., State Health Commissioner of New York, was elected president of the State and Provincial Health Authorities of North America at its annual meeting held in Minneapolis in June.

Diarrheal Deaths of Infants in 1927.

The Bureau of Vital Statistics reports that in 1927 there were 786 deaths in Virginia of infants under two years of age from diarrheal disease, the lowest number by far for any year since 1913 when vital statistics began to be kept in Virginia. This decline in mortality is attributed largely to the fact that mothers know better today than ever before how to care for their babies. In this connection, the Bureau urges "breast feeding" as the method par excellence for feeding of infants.

Dr. E. L. Boone,

Recently of Scottsburg, Va., has just located at Seaboard, N. C., for the practice of his profession. Dr. Boone graduated from the Medical College of Virginia in 1926.

Dr. H. C. Padgett,

Roanoke, Va., returned the latter part of June from Battle Creek Sanitarium where he left his wife and daughter for a few weeks' treatment.

A Heart Hospital for Philadelphia Children.

It is expected that the first 40-bed unit of the new Children's Heart Hospital of Philadelphia will be completed about August 15; the cornerstone was laid on May 2. The patients will come mostly from the heart clinics of the city. The hospital will finally have a 200-bed capacity, and as part of its work it plans to provide week-end rests for discharged patients who return for observation.

Pan-American Conference Health Recommendations.

The conference held at Habana in January and February by the Pan-American Union

recommended the establishment of a corps of visiting public-health nurses in every American country, and the enactment of laws providing for compulsory vacations for expectant mothers, employed in either public or private service, for 40 days before and 40 days after confinement, with payment of full salary.

Dr. W. V. Atkins,

Blackstone, Va., who has been under treatment at St. Luke's Hospital, Richmond, for injuries received in an automobile accident, about the middle of June, is reported as much better.

On Fishing Trip.

Drs. J. L. Wright and H. Grant Preston, of Harrisonburg, Va., with a party of friends, have been on a fishing trip at Cape Charles, Va.

Dr. A. M. Showalter,

Christiansburg, Va., is among the Rotarians who attended the national convention in Minneapolis, the middle of June.

Dr. Mallory S. Andrews,

Of the class of '25, University of Virginia, Department of Medicine, who has just completed a year's service as resident house surgeon at the Hospital of St. Vincent's de Paul, Norfolk, Va., has located in Medical Arts Building, that city, where he will be engaged in general practice.

Posture Training of Infants.

The Villard Center of the New York Diet Kitchen Association, encouraged by its success in the posture training of preschool children, is now conducting experiments in the posture training of infants in some of its baby-conference centers.

The Musically Gifted Child.

The April number of *Child Study*, published by the Child Study Association of America, is entirely devoted to the subject "Music and the Child." Dr. Carl E. Seashore, one of its contributors, expresses the opinion that if the serious training in music begins at 10 or 12, the gifted child can accomplish in a very short period all that would have been accomplished during the strain of five or six years of earlier training.

Dr. R. Lee Seward,

Isle of Wight, Va., has been elected a member of the Isle of Wight County School Board for a term of four years, beginning July 1, 1928.

South Boston Hospital Being Enlarged.

The South Boston, Va., Hospital, private hospital of Dr. R. H. Fuller, is undergoing extensive improvements.

This addition will more than double the present capacity for patients, and will include office rooms for the hospital staff, a new major operating room, one emergency operating room, examination rooms, X-ray and laboratory rooms. This building will be brick fire-proof, constructed on the most modern plan and equipped with the most modern equipment.

The South Boston Hospital was opened by Dr. R. H. Fuller May 1, 1927, with a twenty-one bed capacity, and in twelve months' time his work had grown so that he found it necessary to double its capacity.

Dr. James K. Hall,

Of Westbrook Sanatorium, Richmond, Va., has been appointed consultant psychiatrist to the State Department of Public Welfare. Dr. Hall will act in an advisory capacity to that department in the building up of its bureau of mental hygiene, which is now under way, with the traveling mental hygiene clinic as its base.

Dr. Joseph Coates,

Formerly of Monarat, Va., after several months of post-graduate work in New York City, is now located at Galax, Va., for the practice of his profession.

Copenhagen Promotes Breast Feeding.

Copenhagen has eight infant-welfare stations in the poorer sections of the city to promote breast feeding. Both married and unmarried mothers are admitted, but only when the babies are breast-fed or partly breast-fed. The babies are examined at the station every week or two, and the mothers are given necessary instructions. The neediest mothers receive milk and dinners for themselves and clothing for the baby, and the nurses visit the homes from time to time. Since 1908 these stations have cared for nearly 10,000 children, of whom only 2 per cent died while under care.

Attending Camp.

Major Charles M. Edwards, M. C., and Major William Robt. Weisiger, M. C., Richmond, Va., are among those attending the Medical Officers' Training Camp at the Field Medical Service School at Carlisle, Pa., for the period from July 8th through the 21st.

The Playground Theater.

Children's theaters are being established on

the playgrounds of cities in all parts of the United States, notably in East Orange, N. J., Asheville, Oakland, and that intriguing center of filmdom—Hollywood. The March number of *The Playground* (New York), contains an interesting account of how the East Orange playground theater came into being and how it is used, and also gives lists of plays for little children and children of ten years and over.

Campaign to Sanitate Virginia in Three Years.

With virtually two-thirds of the Virginia counties reported, the campaign to effect 100 per cent sanitation has been definitely launched. It may shock some people to learn that there are in the State counties even today which have less than one per cent of the homes equipped with proper sewage disposal and safe water supplies; but the most backward county in Virginia today is above the average for all Virginia fifteen years ago, and there are today in Virginia a number of counties which can boast of sewage disposal well on the way to 100 per cent, such as Arlington, with 95 per cent reported, Roanoke with 87 per cent reported, Middlesex with 85 per cent reported and fifteen or more between 60 per cent and 80 per cent.

Before the campaign is ended, it may be predicted with reasonable certainty that a number of counties will be in the 100 per cent class and there is no reason why all the counties should not be in the 80 per cent or over class. This practically means a Virginia safe from filth-borne diseases.

Prizes are being offered to the association that secures the best work and the most improvements during this campaign in Virginia.

Preventing Chigger Bites is Better Than Curing Them.

When chiggers grow older they reform, mend their ways, and cease to be the seasonal source of annoyance and inconvenience to many victims which was characteristic of their flaming youth, according to the United States Department of Agriculture. Contrary to the popular impression, chiggers do not burrow into the skin and require extraction for relief. The chigger, minute in size though it is, is capable of injecting a considerable quantity of poisonous material into its host, and it is this poison that causes all the discomfort, the persistent itching that follows chigger bites. The chigger is entirely harmless when mature.

While destroying chiggers does not seem possible, in some areas, studies by the Bureau of Entomology indicate they can be checked in the vicinity of homes and camps by clearing away the underbrush, vines, and weeds from such areas, keeping the grass cut close, and by following these measures with applications of flowers of sulphur or very fine dusting sulphur. It appears, the bureau says, that from 5 to 10 pounds of sulphur scattered over an ordinary city lot will give a high degree of control, sometimes from a single treatment, but it is usually best to repeat the application two or three times at intervals of one to two weeks, especially when the applications are followed by rain.

Councilmen in Hopewell.

Drs. D. Lane Elder and S. B. Perry were recently elected members of the Hopewell, Va., City Council, for the term beginning September 1.

Ecuador Protects Child Life.

Ecuador's new public health law, enacted in 1927, prescribes short terms of imprisonment or fines ranging from about 20 cents to $20, or both fine and imprisonment, for mothers who decline to nurse their infants at the breast, unless a physician has certified their inability to do so. Similar penalties are prescribed for placing a child with a nurse who has not a physician's certificate of health, for failure to have a child vaccinated against smallpox within a certain time or to provide medical care for a sick child promptly if neglect results in death, and for leaving a child locked in a house alone.

New Child Labor Law for the Nation's Capital.

The new law to regulate the employment of minors in the District of Columbia, recently signed by the President, establishes a minimum age of 14 for entrance into all gainful occupations, except that, outside school hours, housework or agricultural work may be performed for the child's parent or guardian, children 12 years of age and over may sell newspapers, and children 10 years of age and over may distribute them on regular routes. For children between the age of 14 and 18 years an 8-hour day and a 48-hour week is established. The provisions of the new law re-

garding dangerous or injurious occupations and street trading and for enforcement constitute a great advance over the former law.

Dr. H. C. Grant,

Smithfield, Va., was called to Pittsburgh, Pa., early this month by the illness of his son, William.

Dr. F. M. Brooks,

Of Fairfax Station, Va., has been elected one of the Fairfax County schools trustees for a term of four years beginning July 1.

Oklahoma's New Child Health Council.

On May Day, 1928, representatives from 41 organizations in Oklahoma organized a State child-health council. Its first objective will be a campaign to see that every child in Oklahoma enters school as free from physical defects as possible.

Continuation-School Classes for an Employment Office.

The New York City Board of Education has authorizel the opening of continuation-school classes in connection with the employment office of the Young Women's Hebrew Association in Harlem. They will offer instruction in vocations to girls who are beyond school age and inadequately prepared for work, while they are waiting to obtain jobs. Similar classes for clerical workers were conducted at the association in 1921, and at several centers in the city in 1914.

The Children's Aid Society of New York.

The illustrated historical survey published by the Children's Aid Society of New York, in recognition of the seventy-fifth anniversary of its founding, reports that during that period it has placed more than 33,000 children in family homes. It is now planning to give greater attention to children of preschool age and gradually to transfer to the public schools the children attending its nine special schools. The school buildings are to be converted into club and recreation centers, and a neighborhood club and health center for colored children in Harlem is to be organized.

Associate Physiologist Wanted.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examination for Associate Physiologist, applications to be on file with the service not later than August the 8th. Full information may be obtained from the above address.

Experienced Technician

Desires position in Richmond. Trained in all routine laboratory procedure. Address "No. 127", care the VIRGINIA MEDICAL MONTHLY, Richmond, Va. (Adv.)

For Sale—

The following equipment of the late Dr. E. H. Heaton: Large Fisher cabinet—latest type machine—and galvanic battery outfit. Everything in perfect condition, having been used only one year. Will sell for half price. Address Mrs. E. H. Heaton, Leesburg, Va. (Adv.)

Obituary Record

Dr. Paulus A. Irving,

Ex-president and from 1910 to 1920, secretary of the Medical Society of Virginia, died at his home in Farmville, Va., June 11th, death being due to heart disease. Dr. Irving was seventy-one years of age and a native of Cumberland County, Virginia. He attended the Medical College of Virginia, Richmond, from which he graduated in 1879 and joined the Medical Society of Virginia that same year. He was for several terms a member of the Medical Examining Board of Virginia and professor of diseases of children at the former University College of Medicine, Richmond, in which city he made his home for a number of years. He was also for fifteen years secretary of the State Board of Health. He had held many positions of honor in the profession and was well known throughout the State. Dr. Irving was twice married and is survived by his second wife and five children.

Dr. John R. Wheat,

For many years a practicing physician of Richmond, Va., died at a local hospital in this city, June 4th, aged seventy-eight years. Dr. Wheat attended the Medical College of Virginia, Richmond, taking his diploma in medicine from that institution in 1877 and joined the Medical Society of Virginia in 1878. In later years, he had spent much time at his country home in Cumberland County, Va. His wife survives him.

Dr. Henry Clay Carson,

Of Osaka, Va., aged fifty-eight years, was instantly killed by an interstate railroad engine, Monday night, June the 18th. He was

struck by the engine on a trestle about three hundred yards from his home. It is thought that he was attempting to cross the trestle and fell and was caught between the railroad ties, as he was down on the track and not seen until the engine was on him. Dr. Carson was graduated from the College of Physicians and Surgeons of Baltimore, in 1892. He had been a member of the Medical Society of Virginia for about twenty-five years. His wife and three children survive him. Dr. Carson was buried at Big Stone Gap, Va., with Masonic rites.

Dr. Edgar B. Smoke,

Of Frederick County, Virginia, died June the 10th, at his home, near Winchester, Va. Dr. Smoke was eighty-two years of age and was graduated in medicine from the Medical College of Virginia, Richmond, in 1868. He had been a member of the Medical Society of Virginia for a number of years.

Tribute to Dr. E. E. Feild.

The Norfolk County Medical Society desires to place on record this tribute to our late confrere, Dr. Edward Everard Feild.

Edward Everard Feild was born on April 11th, 1855, at the old Wyatt homestead, "Walnut Grove," in Greenville County, Virginia, being the fifth child of George Wythe Feild and Ann Wyatt Feild. On his father's side he is descended from Theophilus Feild, who emigrated from England in the early part of the seventeenth century and settled in Dinwiddie County, Virginia, becoming one of the founders of Old Blandford Church, at Petersburg, in whose chancel he lies buried. On his mother's side Edward Everard Feild is descended from Sir Francis Wyatt, one of the early Colonial Governors of Virginia. To quote from Mr. James C. Feild: "Dr. Feild was a great lover of the sports so dear to the heart of the country boy, such as fishing and hunting; he was educated at a little log school house about five miles from his home, at which Mr. Samuel Hardy taught." At the age of twenty-three, Edward Everard Feild entered the University of Virginia, graduating with the degree of M. D., in 1879. "He began the practice of medicine at Hicksford (now Emporia)," continues Mr. Feild, "as a partner of Dr. Edmunds Mason, and then moved to Norfolk." He was actively engaged in the practice of his chosen profession in Norfolk until about four years ago, when he was forced to retire on account of his failing health. He died at St. Vincent's Hospital on May 30, 1928. He was unmarried, and is survived by one brother, two sisters, eight nephews and seven nieces.

Dr. Feild occupied a prominent position in his profession. It is indeed significant that his name appears sixth on the roster of the Norfolk County Medical Society, which was founded on June 5, 1884. He was elected president in 1888. It is also significant that Dr. Feild performed the first operation for appendicitis in Norfolk and that his essay on appendicitis was awarded a prize of $100.00 by Dr. Hunter McGuire, in 1894. At one time Dr. Feild was a member of the Board of Health of Norfolk. He was also associated with Dr. Frank Hope, as quarantine officer for this district. For many years he was surgeon to the British Vice-Consulate, and upon occasion, acting surgeon for the U. S. Public Health and Marine Hospital Service. He was, likewise, an earnest and consistent member of the staff of St. Vincent's Hospital.

In 1922 the University of Virginia conferred the Alpha Omega Alpha on him. In all things medical, Dr. Feild took a profound interest. He represented this district as Councilor to the Medical Society of Virginia from 1908 to 1912. He was a frequent contributor also to the proceedings of the societies to which he belonged, as well as to the leading medical journals; a paper on "Yellow Chills," read at the meeting of the State Medical Society in 1894 being perhaps its author's favorite. Indeed, it has been well said of him by one who knew him well, "Dr. Feild was far ahead of the time in which he practiced." (Dr. H. L. Myers.)

Dr. Feild was a loyal churchman and a consistent member of St. Paul's Episcopal Church. At one time he served on its vestry. Nor was he less zealous in the societies to which he belonged. At the time of his death he was a past master and an honorary member of the Owens Lodge of Masons. As a man and citizen he did his part well; always interested in the affairs of his friends, his city and his profession; always congenial, sympathetic and ready to serve in affliction; always liberal, chivalrous and affectionate. The world is better for the life of Edward Everard Feild.

THEREFORE BE IT RESOLVED: That the Norfolk County Medical Society and the whole profession has lost one of its most distinguished and lovable members, and that we extend to his family our deepest and most heartfelt sympathy; and furthermore be it resolved, that a page in our minutes be dedicated to his memory.

JAS. W. HUNTER,
CHAS. R. GRANDY,
E. C. S. TALIAFERRO,
Committee.

Dr. Charles C. Christian

Died at his home in Urbanna, Va., June the 7th, at the age of sixty-eight years. He was a son of the late Dr. William S. Christian. His wife and a son survive him. Dr. Christian was a member of the Mid-Tidewater Medical Society.

Dr. John Buckner Winfield,

Formerly of Clarksburg, W. Va., but more recently of Fairfax County, Va., died suddenly June the 6th, after having been in bad health for some time. Dr. Winfield studied medicine at the former University College of Medicine, Richmond, from which he graduated in 1897 and was for about twenty-five years a member of the Medical Society of Virginia. He practiced pediatrics in Clarksburg until a short time ago, when he was forced to rest on account of his health. His wife and five children survive him.

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THE EARLY DEFINITE TREATMENT OF STRABISMUS.*

By OSCAR WILKINSON, M. D., A. M., D. Sc.,
Washington, D. C.

The treatment of strabismus in the young child as practiced by the average ophthalmologist at the present time has not materially advanced from that recommended by Javal, one-third of a century ago. Javal corrected the error of refraction with glasses, used atropine in the good eye, excluded entirely for a time the good eye in selected cases to develop the vision in the deviating eye, used the stereoscope to bring about fusion, where this was possible without operating, and in those cases in whom the deviation was too great, he recommended operation, early operation, to set the eyes sufficiently straight to use the stereoscope. With reference to operating, he says:†

"It is a mistake to believe that operation gives better results at a more advanced age. The sooner it is done, the greater are the chances that it will suffice."

I might say this is still in advance of what is often practiced at present. Ophthalmology in general has made many wonderful strides during that period. In fact, it has broken away from its narrow confines, whose therapy was a few local drops and a pair of glasses, and has become one of the chief, if not the chief, diagnostic avenue to general diseases. No physical examination today is complete without a fundus examination. Fundus lesions thirty years ago were considered either syphilitic, albuminuric, or idiopathic, and were treated on what was known as the "Expectant plan"; but today fundus lesions call forth the skill of various specialists and various laboratory tests, until the source of the infections has been found.

This wonderful transformation has not come to the relief of the squinting child. In fact he is too often doomed to the "Expectant plan" of treatment, much to his detriment. This "Expectant plan" is but hopeful indifference and is not worthy of present day medicine.

When a cross-eyed child is brought to an ophthalmologist, he is entitled to very serious consideration.

What is the customary treatment? A pair of glasses is ordered. The patient is directed to return in a month, at which time he may or may not get a drop of atropine in his good eye, and he is ordered to return in another month or six weeks. If he happens to fall into the hands of a real live young ophthalmologist, he may get a pad on his good eye for a few hours each day, and atropine may be ordered daily in the good eye to force the use of the deviating one, and a slight effort made at fusion training. This usually goes on for a few weeks or months, and the patient disappears to show up later in another oculist's office, with more squint and more amblyopia, where much the same procedure is again practiced.

Since criticism is of value only when it is constructive criticism, it would be useless for me to make the above comments without indicating a proper remedy. This remedy is comprised in the title of my paper, THE EARLY DEFINITE TREATMENT OF STRABISMUS.

What constitutes an early definite treatment of strabismus? This comprises a most thorough examination to be followed by a systematic line of treatment. The examination should consist of:

1. History of the case;
2. A thorough physical examination which must take into consideration the nervous status;
3. A thorough examination of the media and fundus under atropine;
4. A most careful retinoscopy must be done after prolonged atropinization and the visual acuity noted;

*Read at a meeting of the Section on Ophthalmology and Otolaryngology of the Medical Society of the District of Columbia.

†E. Javal; Manuel du Strabisme. Paris, 1896, p. 158.

5. Very careful measurement of the degree of deviation under different circumstances, both for near and distant must be made;
6. Determine the degree of fusion;
7. Observe the ocular movements and take the tropometric reading where possible.

The facts obtained from the above data are absolutely essential before we are ready even to begin the treatment of a case of squint, or suggest a prognosis. Many of us are too careless about securing the data and are neglecting these young children by prescribing and re-prescribing a pair of glasses for our squint case to no avail. We have been entirely too long deluded by the GLASS CURE for strabismus. If the properly fitted glass does not cure a case of squint, or at least does not perceptibly reduce the degree of deviation in a few months, it will never do it. Bishop Harman* says:

"If the constant use of glasses that correct any error or refraction does not effect a rectification within a month, we may conclude that the glasses will not correct the squint. Any time allowed to elapse between this conclusion and operation, except so much as may be employed in attempting to regain the sight of the squinting eye, may be considered lost time."

We have listened too long to the song of this glass siren. This is partly due to the fact that the public has been wrongly imbued with this idea, due to the teachings of both the physician and the glass vendor. This erroneous idea should be corrected.

SYSTEMATIC TREATMENT. This consists in the first place of an intelligent evaluation of our findings from the above thorough examination.

Where there is gross pathology, as corneal scars, congenital cataracts, ocular palsies, fundus lesions, etc., these must be eliminated from the regular functional cases and the particular pathology present will indicate the treatment needed.

It is with functional cases that I am particularly concerned. My method of treatment is about as follows:

The first step is to bring up the visual acuity in each eye to at least 6/9, as the greater the visual acuity, the more hopeful we may be of curing the squint. The visual acuity is brought up by prescribing the full correction of the refraction, to be placed on the child at once before the atropine used in obtaining the retinoscopy has worn off. The atropine is discontinued and the patient is told to return in ten days. The condition of the eyes is then carefully observed, the visual acuity of each eye is carefully recorded, and the degree of deviation noted. If one eye squints and the vision is still poor, say as low as 6/60, the good eye is occluded for five or six days, at the expiration of which time, the child reports again for an examination. Usually, in functional squint, the visual acuity will be markedly improved. This occlusion, or padding of the good eye, is kept up for several series of five days until the use of atropine in the straight eye will cause the use of the previously deviating one. When this occurs there is no further need for padding. Partial time padding as is usually practiced does not so effectually bring up the visual acuity. However, it has a place in certain cases.

If after six weeks of complete occlusion of the good eye, or the use of atropine the visual acuity of the deviating one has not improved, further efforts along this line are not apt to succeed. Where the vision improves, and it usually does so rapidly in patients whose eyes have crossed only a relatively short time, this line of treatment should be continued until the vision of the previously deviating eye is 6/9, or better.

The second step is to create a desire for and establish binocular vision. For binocular vision, and binocular vision only, will keep a pair of eyes straight. As soon as the visual acuity is brought up in those cases which are found to respond to this treatment, some effort should be made toward training the fusion power. There are several apparatuses on the market for this purpose. One of the best is Black's modification of Worth's amblyoscope. The best results are obtained in those cases where a definite exercise can be given for several minutes at a time, two or three sittings a week being given. This must be done by the oculist himself, or a specially trained assistant, and even then the oculist must supervise the work from time to time to see that it is being properly done. In selected cases bar-reading is of much value. This fusion training, Worth points out, is not worth the trouble it takes in children above the age of seven or eight years. In other words, if the

*N. Bishop Harman; Trans. Oph. Soc. Un. King., London, 1921, xli, 175.

case is of only short duration and the type of squint periodic, glasses and orthoptic treatment will in all probability relieve it. This shows the absolute importance of seeing these cases early, if a cure is to be effected by means of nonoperative treatment.

The third step, in event of failure to secure binocular vision and straight eyes within six months in all children three years of age or older, is to resort to some operative procedure to set the eyes so nearly straight that it will be possible for the patient to secure binocular vision, which is then trained in the same manner as in the nonoperative treatment. This is possible in nearly every case.

Definite Early Operative Treatment. There are a few things which must have been accomplished before we are justified in operating upon the very young child. It is absolutely essential that the nonoperative treatment has been faithfully tried, and found wanting. The full correction of the error of refraction must have been used constantly for at least six months. The acuity of vision must have been developed by occlusion and atropine until it is 6/9, or better, where possible. The grade of fusion must be determined. And last but not least, the degree of deviation under different conditions and at different times, both at sixty centimeters and six meters must be definitely established by means of definite and accurate measurements.

It stands to reason that in order to establish a definite method of operating, we must first have definite and accurate means of measuring the amount of deviation before we operate.

I have used for years a modification of the Holzer-Priestly Smith tape for determining the degree of deviation at both sixty centimeters and six meters. I have found this method efficient and rapid and it can be used on the youngest child.

The degree of strabismus is measured every twenty days until about five different sets of measurements are taken and a check up on these will give us very valuable information. In fact, it gives us information which can be obtained in no other manner. It tells us whether the strabismus is decreasing, increasing, or remaining stationary. We must not operate upon the very young child without this information. It does more than this, it is our only guide as to *when to operate, on whom to operate*, and *how to operate*. In spite of this fact, many cases of squint are operated upon without ever having the degree of deviation measured. How can we ever establish accurate operative procedures with such indifferent preoperative methods? We are not surprised that many dispute the fact that a definite amount of shortening of a muscle will correct a given amount of deviation. We have been entirely too careless in our preoperative measurements.

A number of years ago, I presented definite operative procedures, with accurate measurements and a strabismus brace. These I have modified but slightly, and have now used them in more than five hundred cases, and with increasing confidence. I have described these methods in detail elsewhere.

In all my operative cases the degree of deviation is first definitely established both for near and far, and a slip of paper on which the deviation and the amount of shortening to be done is recorded is sent to the operating room with the child.

The child is etherized, the brace sutures are placed first, then the pull of the internal rectus is taken and recorded. The external muscle is exposed and shortened according to the instructions on the slip of paper. This is done by means of a specially designed caliper, and the amount of actual shortening is measured after the suture is tied. This is also recorded. After the stitches are tied, I put in the brace which relieves the sutures of *all tension*,—an important point in operating upon children, whom it is impossible to keep absolutely quiet, and permits the eye to heal in the position in which it was left at the end of the operation.

I have frequently presented my operative procedures. They have been very gratifying in my hands. I simply present them to you for what they are worth. The one thing which I wish to impress upon you is this: no matter what method you adopt, let it be some definite measured procedure. That is the commendable feature of Dr. Jameson's operation. As long as we use indifferent methods, just so long we will have varying and unsatisfactory results. Some definite measured procedure should be mastered before one is justified in operating on the very young child under ether.

The fourth step is the post-operative treatment. Within two or three weeks after the operation, fusion training is instituted. The

child is brought to the office and exercises are given as laid down by C. Worth in his excellent monograph on Squint. The exercises as practiced by Wells, of Boston, with his stereo-optometer are especially useful at this stage. In children who are able to read, the bar reading devices are to be recommended. In other words, we teach the child to use both eyes together and endeavor to break his old habit of suppressing the image of one eye. After all, accurate surgical work will enable the child to secure *naturally* binocular vision. Instead of a few minutes' exercise of binocular vision at intervals, they soon have binocular vision the entire day, and then nothing can cause the eyes to deviate short of an ocular paralysis.

These fortunate results are not always obtained by one operation. When fusion training fails after operation, due to the images still being too far apart, other operative procedures are indicated, and should be done after three or four months' delay.

In conclusion, I wish to urge upon you the importance of treating the young child more energetically and assuming the responsibility more frankly. We should teach the parent, the pediatrician, and the general practitioner, that these cases should be seen *early*, at the first glide of the eye. They should also be taught that strabismus is not a trivial affair that the child will outgrow, but a serious condition that often causes the loss of the function of an eye. They should be taught that if glasses do not relieve the condition in a few months, they never will. My message to you is to treat these cases early and methodically, and, when necessary, operate early and definitely.

1408 *L Street, Northwest.*

HEART DISEASE—A PUBLIC HEALTH PROBLEM.*

By F. C. RINKER, M. D., Norfolk, Va.

Mortality statistics indicate an increasing number of deaths, throughout the United States, resulting from heart disease. During the period from 1900 to 1925 there was an increase in the death rate, due to heart disease, from 132 to 185.5 per one hundred thousand population. The mortality rates of the Northwestern Life Insurance Company, from 1858 to 1917, divided into four periods, show the following percentages as the cause of death resulting from heart disease:

1858 to 1885—5.4 per cent.
1886 to 1896—6.4 per cent.
1897 to 1907—7.1 per cent.
1908 to 1917—8.6 per cent.

This is an increase of 59 per cent during the period of 1858 to 1917. During the same period the number of deaths due to circulatory diseases, as a whole, increased from 6.7 per cent to 16.8 per cent, while deaths due to cancer increased only from 3.4 per cent to 7 per cent; nephritis from 3.4 per cent to 9.3 per cent; pneumonia and tuberculosis showing a decrease.

During the year 1926, 1,289,927 deaths occurred in the United States from all causes. Of this number, 294,070 were due to heart disease, or one out of every four. In the State of Virginia, during the same year, there were 4,314 deaths, resulting from cardiac conditions, and in the city of Norfolk 339 out of a total of 1,659 deaths occurred from heart disease.

A few years ago the causes of death ranked as follows: Tuberculosis first, pneumonia second, and heart disease fifth or sixth. Statistics thus show that each heart death now captains the mortality list and other causes have been relegated to the ranks.

Consideration of the above statistics calls forth one possible error, namely, deaths may be charged to heart disease which should not be grouped as such, since heart failure is often the terminal condition in any death. Allowing for this error, however, every evidence, from experience as well as statistical records, points to an increase in deaths due to cardiac affections.

Let us now consider, briefly, some of the etiological factors involved in heart diseases.

Sex Incidence: There appears to be a slight but insignificant difference between the sexes. There are more deaths among males than females during all decades of life, but there is an increase among females during the second, third and ninth decades.

Age Incidence: The actual number of cardiac deaths is small up to 40 years of age in both sexes, colored and white. This incidence rises suddenly between the ages of fifty and sixty and reaches its peak between seventy and ninety.

Racial Incidence: The total number of heart

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deaths is small among the colored race as compared to the whites. The colored deaths, however, are greater at an earlier age, the maximum peak being during the sixth decade. The cause for this is difficult to explain. Syphilis, being more prevalent among the colored than the white race, may play a part in causing earlier cardio-vascular degeneration among the colored, and thus be the real cause of variation.

Rural and Urban Incidence: There is little data at hand to substantiate this belief, but it is the opinion of the writer that heart diseases are more prevalent among urban residents because of the higher percentage of contagious and acute infectious diseases among city reared children than among those raised in the rural districts. This was partly illustrated by experience gained in the examinations of men for the World War.

Occupation: This seems to play no part in the actual causes of heart affections, but is, of course, an important factor in contributing to deaths among those individuals already suffering from cardiac lesions, the rate being higher among those living active physical lives than among those leading sedentary careful existences.

Social Incidence: Undoubtedly, the rapid way in which we live today, coupled with constantly increasing competition in business and social affairs, may well be reckoned among the causes of increase in heart mortality. More important, however, is the question of marriage and child-bearing among women who are already suffering from cardiac lesions. This brings up a difficult problem. Marriage and pregnancy should really be separated. If marriage relieves the woman of physical and mental strain, if it solves a social problem, if it does not involve pregnancy, then the woman who has some valvular or myocardial condition may be advised to marry. On the other hand, if pregnancy is contemplated, she should be warned against its dangers.

This brings us to a consideration of the specific causes of diseases of the heart:

1. There are certain congenital defects that may lead to death. Over these we have no control.

2. The acute infections certainly rank first among the causes of cardiac affections. Of these conditions, acute rheumatic fever, scarlet fever, measles, sepsis, and tonsillar infections are by far the most serious. These diseases usually occur early in life and are frequently the cause of some endocardial or myocardial lesion which does not make itself known until years later. These cases should be detected at an early date and advised regarding their future lives, thus saving many of them from cardiac incompetency during middle life or old age.

3. There are certain chronic infections, or infections having a tendency to chronicity, which often contribute either directly or indirectly to the increase in heart deaths. Syphilis, and infections existing in the mouth, throat, accessory sinuses of the nose, and genito-urinary tract, are among the most important.

4. Vascular changes, particularly generalized arterio-sclerosis and coronary disease, are rated among the more important causes of heart deaths. These two conditions, however, frequently are in turn caused by one or more of the above mentioned causes of cardiac affections.

Having rehearsed, to a degree, some of the more important etiological causes of heart disease, *what is the Public Health problem?* It seems to me that this problem may be divided, for consideration, as follows:

1. Continued vigilance with regard to the proper supervision of the infectious and contagious diseases, and more serious consideration of some method by which these cases may be required or urged to protect themselves for a considerable period of time after the period of specific treatment. I feel that these cases are frequently released from medical supervision too early.

2. Education of the people at large, through concerted action, by Board of Health centers, schools, medical societies, individual physicians, and through the press, regarding the frequency of heart disease, and how those suffering from this condition should live. The public should also be educated along the lines of chronic foci of infection and the importance of removing such localized menaces.

3. The continued use of prophylactic measures against diseases, and more stringent publications regarding the eradication of syphilis.

4. The importance of yearly routine physical examinations. These examinations should be conducted by the family physician, and not through some far distant center, by sending a specimen of urine to them for their scrutiny.

109 *College Place.*

CONGENITAL IDIOPATHIC DILATATION OF THE COLON—MEDICAL AND SURGICAL ASPECTS—REPORT OF CASE.*

By

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Congenital Idiopathic Dilatation of the Colon—Medical Aspects—Report of Case.

The name of this disease defines itself. Congenital idiopathic dilatation of the colon is a term used by the French, English and American writers, and is probably the best terminology as it expresses pathogenesis and etiology. The name Hirschsprung's disease is a "tribute to careful observation and description." The name is prevalent in German and Dutch literature.

History.—Historically we ordinarily think of its conception as a clinical entity with the publication of Hirschsprung's contribution in 1886. More than one hundred years ago Parry described the disease, and in 1829 Billard reports a case with autopsy findings. In 1867 it was described by Lewis, of Chicago. In 1886 Hirschsprung described the disease which now bears his name.

Etiology.—It occurs more often in males than females in a ratio of 3:1. Occasionally a familial element enters.

Nothing is known as to the specific cause of the disease. Nearly as many theories have beeen advanced as there are writers on the subject.

As early as 1870 the theory of long mesentery with torsion of the sigmoid was advanced. Hirschsprung advanced the theory of congenital origin.

Colitis becoming chronic, with subsequent distention by gas, with increase in size of the present muscle fibres and the formation of new ones—a true hypertrophy—has been offered.

Increased length of the colon with looping and kinking may explain a few of the cases, but not all.

Other theories advanced, as actual mechanical obstruction of the colon, congenital aplasia of the musculature of the large intestine, contraction of the sphincter ani associated with fibrosis, neuropathic dilatation ,etc., may similarly explain some cases.

Because so many theories have been advanced, it can be deducted that no one etiological factor bears the brunt.

Symptomatology.—These patients have, as a rule, but two main symptoms,—constipation of long duration and distention of the abdomen. Frequently they will go for weeks without a movement. The abdomen is found distended, often to a very marked degree, so much so as to cause flaring out of the lower ribs. The abdominal walls are thin, and vigorous peristalsis may be visualized. The costal angle is very obtuse. The abdomen is tympanitic, liver dullness is eradicated and, many times, large masses of fecal matter are palpable. The lower lobes of the lungs may be atelectatic and breathing is largely costal. Bronchitis and broncho-pneumonia have been noted.

The heart action may be interfered with, producing a weak and irregular pulse and dyspnoea. The genito-urinary system is generally unimpaired, although there have been reported cases of an associated hydronephrosis and distortion of the bladder.

Diagnosis.—Ordinarily the diagnosis of the illness is easy. The history and examination are generally sufficient, while X-ray confirms the picture.

Sometimes there arises the point of differentiating dilatation of the colon from such conditions as tubercular peritonitis, chronic ileus as volvulus, annular carcinoma of the intestines, dysenteric ulcerations of the colon, and ovarian cysts.

Course.—Ordinarily we think of this condition as occurring in childhood and rarely past adolescence. It is, however, present at all ages. Cases are on record as being found in a foetus of 7 months and one case at the age of 78. The summary of the literature shows, however, that it is far more prevalent in infancy, childhood, and adolescence.

Prognosis. — The prognosis is uncertain. The younger the individual, the graver the outlook. I believe with the present status of therapeusis the outlook becomes brighter.

Therapy.—There are many medical procedures proffered for the relief of this condition, but all fail. The use of atropine has been advocated. Meyers reports the reduction in the size of a colon following its use. I feel that

*Read before the George Washington Medical Society, December, 1927.

the consensus of opinion at present is that all cases should be immediately advised surgical interference.

Report of Case.—Male colored boy, 14 years of age, presented himself to the clinic complaining of constipation of very long duration and with distention of the abdomen. The main features of the examination were these: Height 55 inches (normal 59-60 inches): weight 76 pounds, (normal 94 pounds); nutrition poor; lower ribs flared out, with wide sub-costal angle; abdomen markedly distended; mild secondary anemia.

Roentgen findings: Stomach displaced toward the mid-line by gas in the splenic flexure of the colon. The large intestine was enormously dilated, filling almost the entire abdominal cavity. Only the rectal pouch, sigmoid, and the descending colon were filled, two quarts of barium being used to do this much. A further study showed considerable deformity of the stomach due to pressure from the markedly enlarged colon. The stomach emptied a little slower than usual and there was a moderate six hour residue. Dilatation of the colon was from the middle of the transverse colon.

Congenital Idiopathic Dilatation of the Colon—Surgical Aspects

Idiopathic dilatation of the colon is essentially a surgical disease. The giant colon is an enlargement of the large bowel, mechanical in nature, which fails to react to medical treatment. This congenital defect remains a defect until removed; in fact, it tends to become more dilated as time goes on as a result of fecal impaction. Statistics clearly show that the transverse colon, descending colon and sigmoid is the common sight of dilatation of the large bowel. The entire colon is seldom, if ever, involved.

Before the X-ray had established such definite modes of diagnosis this condition was not so easily recognized. The X-ray now presents the diagnosis clearly, in fact, the colon can be readily outlined and the extent of dilatation can be more or less definitely determined. With the X-ray picture as a background, the surgeon can, in a general way, map out his tentative operative procedure. Final judgment in this matter, however, of necessity must be postponed until the abdomen is opened. It must be made clear to the parents of any child suffering from this condition that a two or three stage operation may be necessary to obtain an ultimate cure. With this understanding there may be no embarrassment as to the proper course to pursue at the time of operation.

Hirschsprung's disease is listed among the less common forms of pathologic lesions encountered in surgery. Because of this fact, the literature shows that the condition has been treated in many ways. Finney was perhaps the first surgeon to describe minutely the surgical approach to this condition. Before he wrote his classical paper upon the subject, there appeared to be no definite outline as to the procedure of choice when this condition was encountered. It is interesting to note that all sorts of surgical procedures have been described in the literature, such as colostomy, colon plication, coloplexy, ileosigmoidostomy, etc.

Today we have at our disposal three possible surgical procedures looking toward the ultimate cure of this distressing condition. In the selected case where the child is in good physical condition, a single stage operation consisting of ileosigmoidostomy and removal of the giant colon may be safely performed. This method is reported by the Mayo Clinic and others. In the presence of a long standing Hirschsprung's disease associated with ill-health, a two or three stage operation may be considered looking toward the safe recovery of the patient. Finney advocates and describes a three stage operation for the cure of the giant colon. His preliminary operation consists in making an artificial anus at a point proximal to the dilated colon. At a second operation he performed an anastomosis of the ascending colon to the sigmoid, and removes the intervening diseased bowel. At a third sitting the colostomy is closed. This operation is safe and sane but has as a drawback soiling which results from the artificial anus. We believe that by the use of the Parker-Kerr aseptic suture that a primary ileosigmoidostomy can be done without the necessity of a colostomy. Because the ileosigmoidostomy can be readily reached the success of the operation can be materially insured by passing a rectal tube from the anus through the anastomosis into the small bowel. At a second stage operation the colon may be

removed in its entirety. This operation provides a safe approach in the presence of a long standing Hirschsprung's disease.

Case Report.—R. E. S., age 14, colored, was referred to me by Dr. John Reed for surgical treatment on June 4, 1926. An X-ray demonstrated the presence of a definite Hirschsprung's disease involving the transverse and descending colon. Two days before admission to the hospital the patient was troubled with abdominal distention, nausea, vomiting and pain. Similiar attacks had been frequent, with the condition apparently getting worse. The general condition of the patient seemed to be fairly good. The abdomen was distended and tympanitic. It was soft and had a somewhat doughy feel. On June 7, 1926, a left rectus incision demonstrated the presence of a marked Hirschsprung's disease with a very large dilated colon, extending from the transverse colon to and including the sigmoid. An ileo-sigmoidostomy was done by the Parker-Kerr aseptic technique.

The convalescence was uneventful and satisfactory in every way. Three weeks after the operation the patient was again operated upon with the idea of removing the diseased colon. A band of adhesions was found constricting the small bowel near the anastomosis, so it was not deemed advisable to do more than release this constriction.

The boy made an uneventful recovery and left the hospital in two weeks. Since this last operation he has been seen on three occasions, and, although he still has his giant colon, the short circuiting operation has apparently given him so much relief that his parents are unwilling to have him undergo further surgery. He is attending school and is entirely free from his former attacks.

CORONARY OCCLUSION, WITH REPORT OF A CASE.

By BLANTON P. SEWARD, M. D., Roanoke, Va.

Not until recent years has the diagnosis of coronary thrombosis been made clinically with any degree of accuracy. The clinical features of coronary obstruction, a persistent pain of varying severity not readily relieved by the nitrites or morphine, with associated changes in the character of the heart sounds, a rapid fall in arterial tension and the development of pericardial friction, have become fairly well known. The distribution of the pain, however, is not the same in all patients. The pain may be felt in the same area as angina pectoris, in which case attention is directed to the heart as the possible cause. On the other hand, the pain may be confined to the upper abdomen and present a difficult diagnostic problem unless one bears this possibility in mind. The case here presented is of interest from this viewpoint.

H. H. H., a white physician, 69 years of age, was seized suddenly with a moderately severe pain in the epigastrium about noon of November 2, 1927. He stated that the pain increased in severity, but was not accompanied with nausea or vomiting. One hour after its onset he felt some discomfort at the apex of the heart in addition to the pain in the epigastrium.

His general condition was good. He had always been active, spending much of his time walking over the hills at his home.

The gastro-intestinal history was negative except for moderate flatulence and mild abdominal pains of short duration during the past year.

Cardio-Respiratory System: In recent months he had dyspnea and palpitation on exertion. At times he felt a sensation of "heaviness" about the heart for a few minutes when walking, but it had never necessitated a rest.

There was nothing significant in the history concerning the genito-urinary tract, or of the organs of special senses.

Past Illnesses: Several years ago he was sick in bed one week with the grippe. He had sore throat frequently, and occasionally mild pains in the joints. In 1921 an emergency appendectomy was performed on him, accompanied with drainage for two weeks.

Physical Examination: One hour after onset of the pain, revealed a well-preserved, elderly man, apparently not suffering acutely.

Teeth: Several of the lower teeth were missing; all of the uppers were artificial.

Tonsils: A purulent secretion was expressed.

Nose: Showed no gross changes.

Cervical Glands: Enlarged.

Lungs: Negative.

Heart: No increase in transverse diameter or in retro-sternal dulness to percussion. The

rate was not increased. The quality of the first sound indicated poor muscle tone; the aortic second sound was accentuated. Blood pressure, 150-110-40; pulse volume fairly good.

Abdomen: Slight tenderness on palpation in the epigastrium; no rigidity of the recti muscles; no cutaneous hyperesthesia.

Dorsal Tenderness: Negative.

Knee Jerks: Diminished.

Rectal: Negative.

The cause of the pain could not be determined at this time. An acute surgical lesion of the upper abdomen and coronary thrombosis were considered. In view of the increasing severity of the pain he was given morphine gr. ¼. The pain was not relieved and he was removed to the hospital.

Three hours later the pain had not abated. The heart sounds were distant, pulse volume small, color ashen gray, and there was a cold perspiration. Temperature 96.8; pulse rate 70.

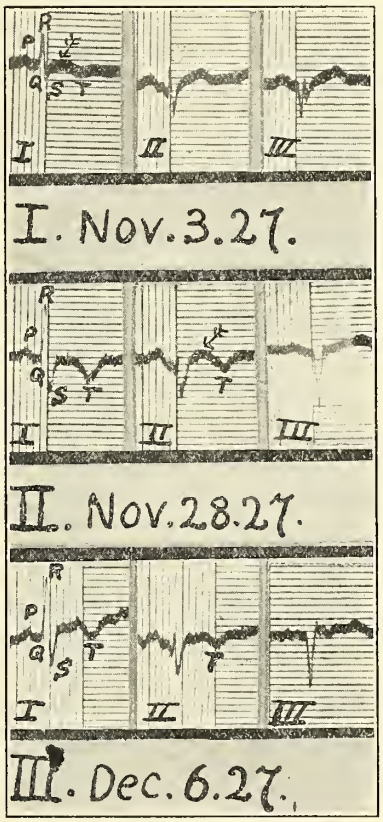
At 5 P. M., he had obtained no relief even though dionine gr. ¼ was given after admission to the hospital. The character of the heart sounds was the same as on earlier examinations; the blood pressure 150-90-60; no special tenderness or rigidity in the abdomen. We believed the pain to be due to coronary occlusion; therefore, efforts were directed towards keeping him comfortable.

The pain, persisting throughout the night and next day, and still confined to the epigastrium, was intensified by deep breathing or turning to the left side. At the same time he had a slight lower substernal oppression, but there was no dyspnea, palpitation or increased pulse rate. A pericardial friction sound was heard; blood pressure 100-70-30. Eye grounds were negative; temperature 100. The diagnosis of coronary occlusion was confirmed.

Laboratory data obtained during his first day in the hospital gave valuable information: Blood urea 50 mgs. per 100 c.c. of blood; phenolsulphonephthalein excretion 28 per cent in two hours. Urine showed a distinct trace of albumin. Leucocytes 21,000, with 85 per cent neutrophiles and 15 per cent lymphocytes; erythrocytes 4,980,000; hemoglobin 93. Wassermann was negative. A smear from the tonsils showed Vincent's organisms, pus cells and staphylococci.

On the following day the blood pressure was 88-50-38, the lowest recorded reading. The patient was comfortable except for lower substernal oppression which disappeared late in the day. Throughout the remaining period of hospitalization—eleven days,—he was free from pain. There was a gradual improvement in the character of the heart sounds, and the blood pressure increased to 108-74-34. Renal function improved, as evidenced by a reduction in the blood urea to 36 mgs. per 100 c.c. of blood, and an increased excretion of the dye to 36 per cent in two hours.

On November 28 the blood pressure was 138-80-58; the pulse volume and color were



Electrocardiograms.

Fig. I.—Made twenty hours after onset of the pain, shows an upward convexity of the S-T interval in all three leads: inversion of the T-wave in lead I, and notching of the QRS complex in lead III.

Fig. II.—Twenty-six days after the attack, shows the convexity of the S-T interval and a deeply inverted T in leads I and II.

Fig. III.—Thirty-four days after the pain began, shows a less prominent convexity of the S-T interval, but the inversion of T in leads I and II remains practically the same. The levocardiogram—left ventricular predominance—prevails in this figure as well as in figure II.

good. Several specimens of urine obtained during the following week showed pus cells, single and clumped, and calcium oxalate crystals. After consultation with Dr. Joseph F. Geisinger, who massaged the prostate and irrigated the bladder, it was decided to treat the pyuria and oxaluria conservatively.

The patient's progress to December 20, when he was last seen, was good. He regained strength, and had no return of the pain. The quality of the heart sounds was good. The blood pressure 146-90-56.

Comment

The close similarity of the symptoms of coronary occlusion and acute surgical lesions of the upper abdomen is apparent in this case. The differential diagnosis is difficult and can be made only by detailed consideration of the history, age, physical findings and close observation of the patient, particularly of the heart sounds and blood pressure readings. These observations are within the scope of every practitioner.

The electrocardiograph renders valuable assistance in clarifying the diagnosis between this condition in which cardiac injury occurs and a surgical emergency demanding immediate intervention. It may render greater service in cases presenting symptoms of a milder degree than such as are usually ascribed to coronary thrombosis. The value of electrocardiography in suspected cases of coronary occlusion is in demonstrating changes in the ventricular complex of the electrocardiogram occurring coincidently with or soon after the onset of the symptoms.

Electrocardiograms made of patients giving evidences of coronary thrombosis and of animals following experimental obstruction, have been found to present certain features which are now generally associated with thrombosis. Pardee[1] stresses two pecularities in the electrocardiogram, namely, an upward convexity of the S-T interval, and an abnormal T-wave. There doubtless are varying degrees of the convexity and of the inversion of the T-wave, corresponding probably to the location and size of the area of infarction. The T-wave is relatively labile. It is influenced by the position of the normal heart as well as by various lesions in the heart, yet the presence of either one or both of these two electrocardiographical abnormalities in a patient giving clinical evidence of coronary thrombosis is probably due to the focal pathological changes following coronary obstruction.

One will observe that both of these phenomena occur in the electrocardiograms made of the patient here reported. The most striking feature in this electrocardiographic study is the inversion of the T-wave in lead I soon after the occlusion occurred, and, later, a deeper inversion of T in leads I and II, indicating greater cardiac injury than is apparent in the first electrocardiogram. Some investigators lay greater emphasis upon the abnormality of the T-wave as representing an abnormal functional balance during ventricular contraction, due to the area of infarction not entering into contraction to the normal degree at the proper time. This pathological basis probably explains the T negativity in these cases.

In Fig. I, the negativity is not as pronounced, probably corresponding to the stage of ischemia. Figures II and III show a rather deep peaked inversion, which we may infer paralleled further pathological changes in the diseased area. Hamburger, Priest and Bettman,[2] in their experimental work, believed "the inversion is due to an area of infarction in the apical region of the left ventricle", and the size that T may assume varies with the amount of disturbance in the coronary circulation.

It would be interesting to know what the direction of the T-wave would be after complete resolution has taken place in the area of infarction in the myocardium of our patient. He was not under observation a sufficient length of time for this to be determined. Although he made considerable improvement clinically, the electrocardiographic evidence, on the other hand, shows a more marked change in the electrical potential of the myocardium, as expressed in the deeper inversion of T in Figs. II and III. Smith,[3] in 1918, found "a slow return to the positive or isoelectric form" following ligation of a branch of the left coronary artery. Hamburger, Priest and Bettman[2] found the same tendency. It is conceivable that as collateral circulation becomes established, fibrosis takes place, the factors interfering with the conduction of the impulse wave diminish, and the heart contracts more normally, the T-wave will resume a more normal aspect.

Conclusions

1. A classical case of coronary occlusion is presented, illustrating the importance of distinguishing between cardiac lesions and pathology in the upper abdomen.

2. The electrocardiograph is a valuable aid in the diagnosis. The upward convexity of the S-T interval with an inversion of the T-wave in one or more leads of the electrocardiogram is suggestive evidence in cases of suspected coronary thrombosis.

3. Correlation of a series of electrocardiographical findings with the physical findings will probably aid in the prognosis of coronary thrombosis. The grave import of such a lesion rests more, perhaps, upon the clinical cardiac status than upon the immediate damage produced by the lesion.

Bibliography.

1. Pardee, Harold E. B.: Clinical Aspects of the Electrocardiogram. Paul B. Hoeber, New York, 1924.
2. Hamburger, W. W., Priest, W. S., and Bettman, R. B.: Experimental Coronary Embolism. *Amer. J. Med. Sc.*, 1926, 171:168.
3. Smith, Fred. M.: The Ligation of the Coronary Arteries with Electrocardiographic Studies. *Arch. Int. Med.*, 1918, 22:8.

Lewis Gale Hospital.

BRACHIAL PLEXUS BLOCK.*

By EDWARD M. HANRAHAN, Jr., M. D., Baltimore, Md.

By an injection of novocain into the brachial plexus, there is produced a complete surgical anesthesia of the whole arm. This useful procedure has been used extensively abroad, but until recently has attracted very little attention in this country. Why this should be so, I am at a loss to explain, unless it is because of a fancied danger to the nerve trunk or the fear of the close proximity of the subclavian vessels.

Reviewing very briefly the regional anatomy, the brachial plexus takes its origin from the fourth, fifth, sixth and seventh cervical and the first thoracic nerves. The large trunks converge downward and laterally, anterior to the scalene muscles and form a trunk which lies very close to the subclavian artery as the latter arches downward and outward over the first rib and beneath the clavicle. More laterally the nerve trunks redistribute themselves in relation to the axillary artery. These structures constitute the land-marks which must be visualized in order properly to introduce the needle in the supraclavicular approach to the plexus. My experience has been limited to this method, as it has been uniformly satisfactory. There are, however, three other approaches, the paravertebral, infraclavicular and the axillary.

The technique which I have used has been based on that described by Labat; and is essentially as follows:

With the patient either lying down or sitting, but in either event, with the shoulder dropped, and the arm close to the side, the mid-point of the clavicle is ascertained between the sternal and the acromial points. One centimeter above this point, one may make an intradermal wheal with novocain, or this spot may be marked with some dye which will be impervious to whatever method of skin disinfection is used. It is advisable that the skin be sterilized beyond both ends of the clavicle as it is sometimes necessary to repalpate the clavicular landmarks.

One should now attempt to visualize the sixth cervical spine, the first rib and the subclavian artery. If the artery can be felt, it may be pressed medially with one finger, away from the neighborhood of the needle. A needle about 4 cm. long, with a fairly blunt bevel, is introduced through the point above the clavicle, backward and medially, in the direction of the sixth clavicle spine. Unless the needle is too sharp, one will feel very definitely its penetration through the deep cervical fascia. The point of the needle is now very close to the plexus, and the patient should be warned not to move quickly if any paresthesia results. The needle is continued in this direction. If paresthesia results, the injection is made without moving the needle. If no paresthesia results, the needle is introduced further and contact is made with the first rib. This is one's assurance that the needle will not penetrate the pleura. The depth of the first rib may be marked on the needle with a small piece of cork or rubber. With this as a guard the plexus is sought for in the hope of obtaining paresthesia. The needle is never levered fanwise, but is slightly withdrawn and reinserted in a fanwise direction. Otherwise, it is conceivable that one may tear the nerves of the plexus. If paresthesia is obtained, 10 c.c. of

*Read before the Baltimore City Medical Society, Baltimore, Md., March 2, 1928.

2 per cent novocain in normal salt solution with 15 minims of adrenalin 1—100 is slowly injected. If paresthesia is not obtained, the novocain is deposited beneath the deep cervical fascia and over the first rib, in a fanwise direction. In this event, an additional 5 c.c. of the solution is injected in the direction from which the nerves come. If paresthesia has been obtained, the novocain injection is usually followed by immediate anesthesia of all of the arm below the insertion of the deltoid. If the injection is made without paresthesia, the anesthesia may be as long as thirty minutes in reaching its maximum. It lasts about an hour and a half. One need never be afraid of this amount of novocain—0.2 gms. It is true that smaller amounts of the more concentrated solution are more toxic than the same amount of the drug in more diluted form, but the toxicity depends entirely on the rate of absorption, which in turn may be regulated by the amount of adrenalin used.

The anesthesia so produced is complete for any major operation below the upper third of the humerus. In case of amputations, or open reduction, with much handling of bone, preliminary morphia (gr. 1/6) and hyoscin (gr. 1/300) is advantageous.

I have used this method in forty-seven patients, male and female, whose ages have run from 7 to 82. Of this number, there were thirty-six closed reductions of fractures and dislocations. In thirty-one, perfect anesthesia resulted. Muscular relaxation was as complete as under a deep general anesthesia. One in a seven year old child was unsatisfactory, but another in an eight year old child was good. In one very fat woman the landmarks were very obscure, and there was very little or no anesthesia. In one impacted Colle's fracture in an elderly woman, some pain was felt on breaking up the impaction, which, however, was eliminated by infiltrating novocain about the site of fracture. In two others, the anesthesia, while not perfect, was satisfactory.

There were ten open reductions and amputations and one drainage of a palmar abscess. Nine had perfect anesthesia, while two were satisfactory. If a clean field is available, it is advantageous to make a subcutaneous infiltration of 0.5 per cent novocain about two inches above the contemplated site of incision.

This method of regional anesthesia is apparently ideal for all operations on the upper extremity. I know of no contra-indication, unless it be a very low blood pressure due to shock. Preliminary to spinal anesthesia, when the systolic blood pressure is below 100, I have used ephedrin to avoid an alarming drop, but I have not as yet encountered this contraindication to brachial block. There are many indications, such as for all patients unprepared for general anesthesia, elderly people and others in whom general anesthesia is contraindicated, and for re-setting unsatisfactory recent reductions.

It has many other advantages: a large percentage of patients otherwise hospitalized are made ambulant. The difficulty of giving general anesthesia in a dark fluoroscopic room is avoided. Furthermore, in dealing with fractures, one has sufficient time for further manipulation, should the X-ray show that the application of plaster has disturbed the fluoroscopic reduction.

References.

Hanrahan, E. M., Jr. Brachial Plexus Nerve Block. *Jour. Amer. Med. Assn.* 1928. Vol. 90, p. 529.
Labat, G. Regional Anesthesia. Philadelphia. W. B. Saunders Company. 1923.

1201 *North Calvert Street.*

THE EXAMINATION OF THE BABY AND SMALL CHILD.*

By C. P. OBENSCHAIN, M. D., New Hope, Va.

This paper is no attempt to educate. All physicians have a method of their own and know how, in varying degrees of efficiency, to examine the baby or small child. However, the summing up of experience of others and the review tabulation and assimilation of the good points will help those of us who are treating these little ones.

Each of us will admit that we have at times overlooked symptoms which had important bearing on the diagnosis and treatment of the sick baby in our care. There can be no fixed rules or standard method of arriving at a diagnosis. Each one must work out his own after using the usual routine.

The parents of the child very often need more treatment in the form of assurance and advice than the baby needs medical attention. The psychological side of the examination cannot be ignored. The best way to keep this

*Read before the Augusta County Medical Association.

in mind is figuratively to place ourselves in the place of the parents. They will do anything, suffer any hardship and spend all they have to save their child—their dearest possession. It is easy to understand how the physician can lose their confidence by being unsympathetic or showing lack of thoroughness in his attention to the diagnostic evidence. On entering the sick room our efforts on behalf of the sick child are keenly observed by the anxious parents and perhaps by a few aunts and other relatives. Tact is here essential. A brilliant diagnosis arrived at by laboratory and other scientific methods which take time will not console or satisfy if the little patient has gotten desperately ill or died in the meantime. An elaborate post-mortem discussion will not be satisfactory to these same parents. Results are demanded, or a tactful explanation that a favorable outcome can not be hoped for. It must be kept in mind that the uninitiated do not understand medical language, and the less of this used the better.

The field of pediatrics is just coming into its own. The general public is beginning to recognize the wide range of its powers. The cities have taken advantage of this already. The rural districts are waking up to its use. This recognition will continue to improve as we grow in knowledge. These pediatricians are adding to the average life of man. They are saving the state and society from the misfit, the cripple, the blind and degenerate. It is up to all physicians to study this portion of general practice as much as possible, both to help our little patients and to know when to call the specialist.

In tabulating the headings for examination, it has been thought best to have four groups. In order of importance, we have history, observation, physical examination, and laboratory.

History.—In nearly every instance the mother will be present at the examination, and where there is intelligence we can get much valuable assistance. It is impossible to describe all questions which may arise. However, parents must be always diligently questioned at first acquaintance. In one family out of four, syphilis may play some part in all ailments. Obviously, these pointed questions cannot be asked the mother, and we must depend on the physical diagnosis or the laboratory. In getting the history, former ailments must be known and what treatment has been given. It is with poor grace, indeed, that a physician can tell the parents of a child that it has diphtheria, when a little effort on our part, if the family has been under our care, could have prevented this. At times the parents will state that they have been taking their child to a specialist, when, on careful inquiry, this specialist (self-styled) turns out to be a quack or charlatan, or worse, those insiduous black-mailers pretending to practice medicine, and living off the reputation built up by honest physicians. In these cases we must be careful to educate. Again, perhaps, old Aunt Mirandy is on hand to volunteer much information, such as that one of her neighbor's children was under the care of a chiropractor for six days and getting along well with diphtheria up until a "regular M. D." was called, when diphtheria antitoxin was immediately given, killing the child the same day. This was said to be an absolute fact, because the chiropractor had told her so. Perhaps old Grandmother Steptoe has arrived with her bottle of snow water, which was caught from the last snow in April, the year before, on the thirteenth, at 10 A. M., guaranteed to cure anything, from hollow horn to liver-grown. This is, of course, a flare-back to pre-historic superstition, which is inbred in us all to a greater or less extent, and which is taken advantage of by the Indian medicine man. This same medicine man can be well called a gentleman when compared with some of our disciples of the modern cults and quacks. At this point, tact is again essential. At times a general clean out of the Job's comforters and would-be advisers is the best policy, especially so if the welfare of the baby is at stake. We cannot afford to compromise when we know we are right.

The history of exposure will often clinch our diagnosis. This exposure to infection will often have been overlooked by those caring for the baby until questioned. Even here we can not jump at conclusions. Many children who are exposed to diseases do not develop the same. It is well to remember that the baby at the breast does not take diseases easily, and that all babies under one year, or practically all, are immune to diphtheria and scarlet fever. In my opinion they are immune to many other diseases, since many of them sur-

vive the snaggle-tooth kissing of friends and relatives and other misguided idiotic ministrations.

The history is not full until the father is known to be free from hereditary taint or from previous trouble, which it is possible for him to hand down to his off-spring.

Observation.—By simply watching the sick baby for a few minutes we can, after experience, get much help in our diagnosis. Its position while asleep, the character of its cry, the breathing rate and depth, the presence or absence of skin troubles, paleness or ruddiness, state of nutrition, peristaltic waves over abdomen, all and much more must not escape our attention. The character of the bed and clothing is important. Is the little patient almost out of sight in a feather tick with a flannel band around its little body on the last week in July? Has it a poultice of apple-butter or fried onions over its chest? Our diagnosis will often be made (very quietly to ourselves) —"misguided zeal of over-anxious relatives."

In our observation we often must overlap the physical examination. In this we must start at the top of the head and not be finished until every portion of the child's body, external and internal, where possible, has been examined. Of course, this complete procedure is not necessary where the diagnosis is apparent. Nearly all little ones resent this familiarity with their anatomy. It is up to the physician to gain their confidence. It is wonderful how early in life the little fellow gets used to his physician who will take the pains to get his confidence. This small child will scream with fright or anger at the approach of a strange physician, while the same child will suffer any examination by its own physician and even allow some pain to be inflicted. It is doubtful if the doctor who has to fight to get his examination does the child much good at any time.

But few tools are necessary for making of this diagnosis—stethoscope (one that does not require the head to come close to the child), wood tongue depressor, rectal thermometer, ear speculum, and, above all, some method of throwing a light into the throat. Naturally we will use percussion, palpation, auscultation, the refinements of these being left to the individual, as also their necessity in any given case. Our knowledge of the significance of the findings is gained more by experience than by any printed instructions.

If we at this stage have not satisfied ourselves of the diagnosis, or if there is any doubt whatever, we must resort to the laboratory. This can be best done by specialists in bacteriology, blood examination, etc. However, each of us can do a portion of this laboratory work, such as the preliminaries of the urine examination, blood count, and even a smear culture. The equipment is not expensive. It is much consolation to get the report immediately and first hand.

Even after having exhausted all of our known means to arrive at a diagnosis in treating the baby, a small percentage of mistakes will be made. However, we have full control of this, and we can at least have a clear conscience, for the greater number of lives we may help by being accurate and careful in our examinations will many times offset the occasional instance when we must change our opinion.

DYSTOCIA FOLLOWING THE USE OF RADIUM IN THE UTERUS.*

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A paper on another subject was being prepared for this meeting, but unavoidable circumstances made it impracticable to present it at this time. The sudden change of plans has not allowed sufficient time for the preparation of an elaborate paper, so this will consist merely of three case reports, mention of some important points, and a warning.

Although the effects of radium therapy of the uterus in relation to subsequent labor is a question perhaps foreign to the Section on Internal Medicine, the uses of radium are becoming so numerous that no matter what his field of practice, any physician may have occasion to decide as to the advisability of its employment.

A hasty but fairly comprehensive search of the literature has failed to show any reports of dystocia following the application of radium to the cervix or body of the uterus. That this is a not unlikely result will be shown by the following cases:

*Read by invitation before the Section on Internal Medicine of the Medical Society of the District of Columbia, January 20, 1928.

Case 1.—Mrs. C. H., white, age 32, multipara, seen in consultation with Drs. L. B. Castell and Edmund Horgan March 18, 1924. The patient, 6 months pregnant, was being treated by Dr. Castell for aortic regurgitation. In May, 1920, the appendix, left ovary and right tube had been removed at operation. In February, 1922, following a diagnosis of fibroids, radium had been applied for 24 hours.

For three weeks after this treatment the patient was confined to bed in the hospital suffering from pains in the back and head, due, she says, to the sacral anaesthesia employed for the insertion of the radium.

The result was menorrhagia rather than amenorrhea. Later, periods became normal for four months while taking ovarian extract.

The current pregnancy had been obstetrically uneventful, but the heart condition had grown progressively worse. On March 18, 1924, the membranes ruptured spontaneously and a loop of cord was found to be extruded through the cervix. Dr. Horgan, who had seen the patient in consultation after the radium treatment, was called, and in turn requested that the writer be asked to participate in the consultation. In the expectation that labor would start spontaneously, nothing was done for 24 hours, but, as pains had not begun at the end of that time, it seemed best to deliver the patient.

The cervix was long, indurated, barely admitted a finger-tip and seemed to be absolutely undilatable. In view of the cardiac condition and the fact that the fetus was dead, a laparotomy was deemed inadvisable. Vaginal Cesarean section was selected as the best method of delivery, and was performed with great difficulty. The induration was not confined to the cervix but extended well up into the uterine wall, necessitating long incisions both anteriorly and posteriorly. The surgical recovery was uneventful but the patient was in the hospital for two months suffering from a severe puerperal psychosis.

Case 2. Mrs. W. M., white, age 41, primipara, seen in consultation, October 30, 1925. Menstrual history normal. Last period December 20-23, 1924. Moderate nausea began in February, 1925. On March 29, 1925, examination showed cervical polypi. Pregnancy not considered to be present. On April 5, 1925, radium was inserted. The patient insisted that she was pregnant, and on July 6, 1925, seven months after the cessation of the menses and three months after the radium treatment, she was X-rayed and told that pregnancy was not present. Three weeks later, two physicians told her that they heard fetal heart sounds and that she was seven or eight months pregnant. On October 23, ten months after the end of her last menstrual period, intermittent pains began to occur in the lower abdomen. These pains continued with increasing severity. At the end of four days, the attending physician said that she was pregnant but not more than 8 months. She was given hypodermics at varying intervals until October 30, 1925, but the pains continued. On the night of October 30, the writer was called. At that time the pain was continuous and evidently excruciating. Examination showed an irregular mass, of board-like rigidity, reaching to 7 c.m. above the umbilicus. No fetal heart or movements were heard, but the uterine souffle was present. Owing to the extreme hardness of the tumor and the irregularity of its outline, the diagnosis made was pregnancy complicated by fibroids and death of the fetus. The cervix was small, long, undilated, and showed no softening.

Laparotomy disclosed a uterus contracted so tightly around the fetus that it conformed to the irregularities of the body. It was these irregularities, simulating nodules, which gave the impression of fibroids when felt through the abdominal wall.

The fetus was macerated and apparently at full term. The placenta and membranes were densely adherent to the uterine wall and were separated with difficulty.

The patient made an uneventful recovery, and had menstruated regularly up to May, 1927.

Case 3.—Mrs. N. A. S., white, age 40, para VI, seen in consultation with Dr. Williman, September 15, 1927.

In 1920 patient had been curetted and radium had been applied for the cure of metrorrhagia.

The present pregnancy had been uneventful and labor had started at about the expected date. After five hours of hard contractions it was found that the cervix was long, hard and thick, with no dilatation. A contraction-ring was felt at the level of the umbilicus, and, as rupture of the uterus seemed impending, a

Cesarean section was done immediately after the consultation.

The lower uterine segment was found to be almost paper-thin, and extended to the contraction-ring at the umbilicus. A live baby, weighing 6 lbs., 9 ozs., was delivered, and sterilization was accomplished by resection of the tubes. The placenta and membranes were densely adherent. Recovery was uneventful.

We have here three cases in which, after the use of radium, the indurated cervix formed an absolutely impassable barrier to the expulsion of the fetus.

Two of the women became pregnant several years after the use of radium, proving that sterilization does not always result.

In the second case, pregnancy was undoubtedly present when the radium was applied, which shows that radium is not always fatal to the fetus.

Two babies were lost and one patient barely escaped a ruptured uterus, which practically always means death to the fetus if not to the mother.

The value of radium in the treatment of many pathological conditions is unquestioned. Unfounded criticism might deprive some patients of its employment as a life-saving measure. When the first case in this series was encountered, it was considered a probable coincidence. The second case strengthened the belief in a possible cause-and-effect relation between radium and dystocia. When three cases had been observed in three and a half years, it seemed only proper to report them to the profession, with the observation that, in view of the severity of the complications which may occur during labor, endangering the lives of both mother and child, the use of radium in the uterus during the child-bearing period is a procedure which entails the gravest responsibility.

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CAUDAL ANESTHESIA IN CYSTOSCOPY.*

By HORATIO N. DORMAN, M. D., Washington, D. C.

The use of the cystoscope has increased in importance until today it is one of the most commonly used diagnostic instruments at our command. To the urologist its function is twofold. First, it serves as a means of establishing an accurate diagnosis in lesions within the urinary tract, as well as differentiating other lesions in structures contiguous to the urinary organs. Second, it is used in the treatment of many lesions, as, for example, pyelitis, ureteral stones and strictures, and bladder tumors.

There are two considerations of paramount importance in the legitimate use of the cystoscope. They concern, first, the patient, and, second, the cystoscopist. The patient is interested only in his personal comfort; the cystoscoptist in his ability to make a thorough, careful and accurate examination. As long as our manipulations are painless, the patient's co-operation is assured; but, when the element of pain enters, it becomes increasingly difficult to get just the information desired, due to a lack of complete co-operation on the part of the patient. Hence, the importance of making our examination as nearly painless as possible. This leads us to a consideration of the anesthetics best suited to our use in cystoscopy. Obviously no one method of anesthesia will be suitable for all cases. The temperament of the patient, as well as the type of lesion suspected, helps us to decide upon a suitable anesthetic in each case. Here, as in any surgical procedure, the anesthetic may be general, or local. We have employed general anesthesia in the form of nitrous oxide-oxygen, with or without ether, in a certain small group of cases that we could not successfully handle by local anesthesia of the urethra. Contra-indications to the use of general anesthesia in cystoscopy are too obvious to require discussion here. To point out that the majority of these difficult cases can be successfully handled by the relatively simple method of caudal anesthesia is our object in presenting this paper.

With the introduction of cystoscopy, local anesthesia of the urethra and bladder has been employed in the great majority of cases. For this purpose, solutions of cocain, novocain, alypin, procain, neocain, salacain and many other drugs have been used in the urethra in varying strengths. Lewis uses a tablet of novocain which he deposits in the posterior urethra with equally good results. These applications are easily and quickly made and, in the ordinary, tractable patient, with a comparatively normal urethra and bladder, serve our purpose very well. In the group of cases previously referred to, any local application to the mucosa of the urethra and bladder is

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insufficient to produce adequate anesthesia for cystoscopy. Such conditions as tuberculosis of the bladder, malignancy of the prostate or bladder, acute cystitis or posterior urethritis, contracture of the vesical outlet, Hunner ulcer, and vesical calculi, are conditions which produce a hypersensitiveness of the bladder and posterior urethra which make the passage of an instrument under a local anesthetic very painful. It is in such conditions that caudal anesthesia is particularly applicable. It fulfills our requirements, in that it is quickly and easily given, it produces the desired anesthesia in nearly all cases, it is harmless when properly given, and it can be used in the aged where a general anesthetic could not be given with safety.

Caudal anesthesia, known as caudal, extradural or epidural block, is produced by passing a needle through the sacral hiatus, and into the sacral canal where the anesthetic fluid is deposited.

Historical Sketch. Cathelin, in 1900, was the first to inject the sacral canal. He injected normal saline solution for the relief of certain neuroses of the urinary tract with moderate success. He was able also to produce extensive anesthesia in dogs by injecting three cubic centimeters of a one per cent solution of cocain, but his early attempts to produce anesthesia in the sacral nerves in human beings were unsuccessful.

Stoekel, in 1909, reviewed Cathelin's method and used it successfully in obstetrics and in perineal surgery. He used novocain in his work. One year later, 1910, Lawen and Gros attracted serious attention to the method by their work. By the addition of sodium bicarbonate and adrenalin to the novocain solution they were able to increase materially the degree of the anesthesia. Lawen stated that sacral anesthesia was used routinely for all urethral and perineal operations in the Leipsic Clinic at that time.

Harris, in 1914, was the first American to publish his work on caudal anesthesia. In his paper, "Nerve Blocking," he claims that the perineum, including everything from the sacrum behind to the symphysis in front, can be successfully blocked by injecting the sacral canal.

Following this work, Lewis and Bartels, 1916, reported eighty-five cases in which caudal anesthesia was used. In forty-six out of sixty-eight cystoscopies, excellent analgesia was produced, and ten out of thirteen prostatectomies needed no other anesthetic.

Pickens, in 1916, and Lynch, in 1918, reported very satisfactory results with its use and, in 1920, Labat introduced the method of nerve blocking in the Mayo Clinic. Since that time the method has been taken up by all our larger clinics until now its use has become very general with urologists throughout the country.

Anatomy. A working knowledge of the normal sacrum and its more common abnormalities is essential to one using this method. The sacrum, in adult life, is made up of the bony fusion of the five sacral vertebrae. For our present consideration its most important anatomic features are: the canal, its contents, and its hiatus. The sacral canal is a continuation downward of the spinal canal and is enclosed by the bony walls of the fused segments, except at its lower end where it terminates in the hiatus sacralis. On cross section the canal has the shape of an isosceles triangle with its base anteriorily. The canal decreases in size from above downward. It contains the dural sac and sacral nerves. The sac usually ends at the lower border of the second segment, about six centimeters from the sacral hiatus. From this point on the sacral nerves are extra dural and lie free on the anterior wall of the sacral canal until they pass outward through the foramina. Hence the possibility of anesthetizing these nerve roots without entering the dural sac—the distinction between this method and spinal anesthesia. The anterior branches of these sacral nerves, with which we are chiefly concerned, pass out through the anterior sacral foramina to the pelvis, where they unite to form the sacral plexus. The sacral plexus gives off the pubic nerve which, with its branches, supplies the bladder, prostate, perineum and external genitals. The sacral hiatus, an inverted V-shaped opening in the bony structure at the lower end of the sacrum, is the result of the non-closure of the laminae of the fifth sacral vertebra. It is situated just above the base of the coccyx and is bounded laterally by the sacral cornua and above by the spinous process of the fourth sacral vertebra. The sacral hiatus is rather easily located, in most subjects, by passing the index finger of the left hand from the tip of the coccyx upward until a slight soft depression is felt at the junction of the coccyx and sacrum.

Technique. There are a few simple rules to follow in order to insure the best results. Preliminary narcosis, recommended by many writers, has not been given in any case in our series. The patient is placed in the prone position with three pillows under the hips. This elevation of the buttocks helps to accentuate the bony landmarks. The injection is performed under aseptic conditions, as for an open operation. The skin over the sacrum and buttocks is cleansed in the usual way and painted with iodine. The hiatus is then located and a wheal is raised over its center, using a small hypodermic needle. The needle is then passed deeply and all the tissues over the sacrococcygeal membrane are thoroughly infiltrated. The importance of this point cannot be over-emphasized. Unless the skin and subcutaneous tissues are thoroughly anesthetized the patient may experience some pain with the passage of the relatively large puncture needle. This pain, coming so early in the procedure, may be sufficient to destroy the none too strong morale which a certain group of patients have for any local anesthetic. The wheal is then gently massaged until the fluid becomes absorbed, restoring the normal landmarks. The injection is made with a ten centimeter steel needle. The needle, with stillette in place, is held with its bevel upward at an angle of about forty-five degrees with the sacrum. It is then withdrawn slightly to free its point, and the hub of the needle is lowered toward the gluteal cleft until it is practically horizontal with the skin over the sacrum. It is then advanced slowly and gently into the sacral canal for a distance of three to five centimeters. The needle should pass easily and without pain. Any obstruction or pain denotes an improper plane of insertion and should be corrected by changing its position by depressing or elevating the shoulder. With the needle in position, the stillette is withdrawn and if no blood or spinal fluid (this latter has never obtained in any of our cases to date) flows out, the aspiration test is made to be doubly sure that no intra-spinal nor intra-venous injection be made. The syringe is then filled with the solution to be used and the injection made very slowly into the sacral canal. Under normal conditions this is accomplished with very slight pressure,—the fluid passing freely into the sacral canal as into an empty cavity or into a vein.

Instruments. It is most important to have proper needles and syringes in order to administer any local anesthetic successfully. We have found the ten c.c. syringe of Labat, as modified by Lundy, with the lock needle device and the eccentric tip, to be entirely satisfactory. One should make sure that the plunger is tight enough to prevent regurgitation and yet loose enough to work easily. The needles should be of the proper size and length and above all things sharp. Rusty or brittle needles should never be inserted into the sacral canal for fear of breaking. Such cases have been reported. This accident is not likely to happen with flexible steel needles in good condition.

Amount and Strength of Solution. This method is still too new to expect anything like standardization of solutions at the present time. Lawen, who was the first to popularize the method, recommended from 20 to 25 c.c. of 2 per cent solution of novocain and epinephrin, with the addition of sodium chloride. Labat and Brenner use 30 c.c. of a 2 per cent solution of novocain with adrenalin. Char gets his best results with 45 c.c. of a 1 per cent solution of novocain with epinephrin and states that less than 30 c.c. has been found ineffective. Lowsley and Morehead use 30 c.c. of a 2 per cent solution of novocain without adrenalin, claiming equally good results and a less toxic solution. Lewis and Bartels claim to increase the efficiency of the novocain-adrenalin solution by adding equal parts of potassium sulphate, and Harris believes the addition of calcium chloride produces the same results. In the experience of Meeker and Scholl (500 cases) no increase in efficiency could be demonstrated by the addition of various salts to the novocain-adrenalin solution.

In our series of cases we have used from 25 to 30 c.c. of a freshly prepared 2 per cent novocain-adrenalin solution in normal salt. This is prepared from a standard tablet on the market in which the novocain and adrenalin are combined. Our results in these cases together with the more recent publications of others, notably Char, Elliott, and Brenner, have convinced us that the best results are to be attained by using a larger quantity of novocain in a weaker solution. Haines says the degree of anesthesia depends upon the amount of solution injected, and not upon its strength. Brenner's work on fluid levels in the spinal canal, verified by Elliott working separately,

proved that 30 c.c. injected into the sacral canal fills the canal only under slight tension. It has been noted (Brenner, Char) in certain cases where enough solution was injected to completely fill the sacral canal and cause slight pressure that a sense of fullness is felt in the sacral region, and that more complete anesthesia has resulted in these cases. With these facts in mind, we have attempted to fill the sacral canal with a 1 per cent novocain-adrenalin solution in our recent cases, not included in this series, and, although it is too soon to draw any general conclusions, we are of the opinion that we are going to get better results than heretofore. Young says he gets his best results with 15 to 20 c.c. of a 3 per cent solution of procain without adrenalin and believes the incidence of reactions to be high with larger quantities of solution. Our results would seem to disprove this.

Onset—Duration. Each sacral nerve as it leaves the dural sac is covered with a continuation of the dura for a variable distance. This covering protects the nerve to a certain extent and makes absorption slower than would otherwise be the case. The time of onset of anesthesia varies in different cases with the amount of solution used and the proximity of deposition to the nerve trunks. Ordinarily from ten to twenty-five minutes should be allowed for complete anesthesia. The ordinary cystoscopic manipulation does not require any great length of time, so we have no accurate knowledge of the duration of the anesthesia. It is believed, however, to be effective for at least two hours. Extensive bladder surgery, fulguration, etc., requiring one and a half hours have been done with perfect analgesia.

Reactions and Contraindications. Labat says that every patient reacts more or less to sacral injections of novocain and adrenalin. The amount of reaction depends upon the strength and amount of solution used, and the rapidity of injection. Rapid pulse and palpitation of the heart are the most common symptoms, sometimes followed by increased respiration and labored breathing. These symptoms begin during the injection and clear up immediately, without treatment, as the injection is stopped. Char reports a case where the injection was followed immediately by alarming symptoms—syncope, respiratory difficulty, and a subjective sense of impending dissolution. He believed the injection had been made into the dura or into a vein. The symptoms subsided in a few minutes. Elliott reports two cases of extreme respiratory paralysis following injection of 40 c.c. of a 2 per cent solution. In one, an obstetrical case, the paralysis came on twenty-five minutes after injection and was believed to be due to delayed venous absorption caused by pressure of the foetal head on the sacral plexus. In the second case paralysis came on immediately, due to injection into the dural sac. These were the only two reactions noted in a series of 600 cases. Scholl, reporting 123 cases of caudal anesthesia at the Mayo Clinic, says, that immediate or late symptoms were rare following injection. Labat, who has probably used this method more extensively than any other anesthetist says he has seen no ill effects with caudal block when the proper technique is followed. We have had no untoward symptoms in any case. Occasionally a patient complains of a peculiar sensation in the sacrum or head, or a sense of numbness in the buttocks or thighs, but these pass away at once and have given us no concern.

The only contra-indication is an abnormal condition or deformity of the sacrum preventing the successful introduction of the needle into the sacral canal.

Case Reports

Since we began using this method we have examined thirty-eight patients under caudal anesthesia. These cases were chosen from private practice and represent thirty-eight out of some four hundred cases cystoscoped. All of these cases were chosen for certain definite reasons. Many had been cystoscoped before, some several times, under local or general anesthesia, and were unwilling to submit to a repetition under a local anesthetic. Some were known to have tuberculosis with contracted bladder. Many had a hypersensitive condition due to malignancy, infection or calculi, making it difficult, and in some cases impossible, to pass a small catheter into the bladder. In all of these cases an anesthetic, other than local, was imperative.

Of these thirty-eight cases, anesthesia was satisfactory in thirty-four or 89.47 per cent. There were four failures, or 10.53 per cent. These results are about the same as reported by Goldstein who had 87.84 per cent successes, Char 96.38 per cent, Mumey 85 per cent, and Lewis 85 per cent. In a recent paper by

Lundy, of the Mayo Clinic, one hundred and one cystoscopies were reported under caudal, with 99 per cent of good or fair anesthesia. This percentage seems about what we may reasonably expect to attain with proper technique and experience.

The accompanying tables show at a glance the examination made, the results obtained and the diagnosis in each case. Briefly there were sixteen cystoscopies, ten pyelographies, eight ureteral catheterizations, and four fulgurations. There were five cases each of tuberculosis and pyelitis; four cases each of vesical tumor, and prostatic obstruction with marked cystitis; three cases of vesical calculus; two cases each of kidney calculus, carcinoma of the prostate, and haematuria (kidney origin). There was one case each of the following: chronic alkaline cystitis, cystitis, prostatic obstruction with cystitis and diverticulum, granular cystitis with diverticulum, deformed pelvis, Hunner ulcer, ulcerative prostatitis, double pelvis and ureter with stone, ulcerative prostatitis. Three cases were negative.

Examinations and Results.	No.	Successes.	Failures.
Cystoscopy	16	13	3
Cystoscopy & Pyelography	10	10	0
Cystoscope & Ureteral Cath.	8	7	1
Fulguration	4	4	0
Totals	38	34	4
Sex			
Males	28	25	3
Females	10	9	1
Totals	38	34	4
Diagnosis			
Tuberculosis	5	5	0
Pyelitis	5	5	0
Vesical Tumor	4	4	0
Prostatic Obstruction with Cystitis	4	3	1
Vesical Calculus	3	2	1
Kidney Calculus	2	2	0
Carcinoma of Prostate	2	1	1
Haematuria (kidney)	2	2	0
Chronic Alkaline Cystitis	1	1	0
Cystitis	1	1	0
Prostatic Obstruction with Diverticulum and Cystitis	1	1	0
Deformed Pelvis	1	1	0
Granular Cystitis with Diverticulum	1	1	0
Hunner Ulcer	1	1	0
Ulcerative Prostatitis	1	1	0
Double Pelvis and Ureters with Stone	1	1	0
Negative	3	2	1
Totals	38	34	4

A brief consideration of our four failures show that in three cases we had difficulty in getting the needle placed. In one case, a rather nervous girl, complaint was made before the needle entered the canal, due, I believe, to a lack of sufficient care in anesthetizing the superficial tissues. In the other two cases, both men of advanced years, a few drops of blood escaped through the needle. This was entirely our fault in adjusting the needle. The fourth case, an intractable man with carcinoma of the prostate, insisted on having gas. We were equally insistent on using caudal, and the injection was made easily. However, when we came to pass the cystoscope, the patient absolutely refused to co-operate and gas was given. It will be seen, then, that three of our failures were due to our inexperience and the fourth to a lack of co-operation on the part of the patient.

An idea of the real value of the method and what can be accomplished with its use in cystoscopy can be gained by citing three typical cases:

Case 1.—Male, 72 years of age. Diagnosis: Prostatic lip and small right lobe with cystitis. Prostatectomy done in Georgia two years ago. Now complaining of marked frequency, day and night. Urination difficult and painful. Urine foul with much pus and infection. Attempts to pass a No. 16 and 18 curved catheter met with failure due to hypersensitiveness of the urethra and obstruction at the vesical neck. A filiform and No. 14 catheter follower was finally passed, but the patient complained bitterly of pain. After a few weeks of local treatment, without improvement, the patient was sent to the Hospital for cystoscopy under caudal anesthesia. Thirty c.c. of a 2 per cent novocain-adrenalin solution was injected. A No. 24 cystoscope was passed, the bladder thoroughly examined and the instrument removed before the patient was aware of what was going on. When asked how he liked it, he replied, "Go as far as you like, boys, I can stand it."

Case 2.—Male, 43 years of age. Diagnosis: Tuberculosis of his only remaining kidney and of the bladder. One kidney was removed nine years before. Now wears a urinal because of incontinence. Bladder capacity about one ounce when in the reclining position; no capacity when on his feet. Bladder urine positive for tubercle bacilli. Patient had been cystoscoped two or three times before elsewhere

and refused to submit to another without a general anesthetic. Caudal anesthesia was administered, as in the previous case. A tight meatus, and stricture of the pendulous urethra, were dilated with sounds, after which the cystoscope was passed easily and a thorough examination made with absolutely no pain.

Case 3.—Male, 82 years of age. Diagnosis: Carcinoma of the prostate. Patient seen in consultation at Naval Hospital. Previous attempts to pass instruments had failed on account of pain. General condition of patient precluded inhalation anesthesia. Caudal anesthesia was given as in the previous cases and cystoscopy was performed with perfect analgesia.

These cases give us an idea of the usefulness of caudal anesthesia and the pleasing results to be had by its employment in certain cases.

Conclusions

1. Caudal anesthesia, because of the ease of administration and effectiveness, is the method of choice in all difficult cystoscopies where local anesthesia is inadequate.

2. Caudal anesthesia, when properly administered, produces no untoward results and there are no complications.

3. A more general use of caudal anesthesia tends to more and better cystoscopies, more relief from suffering on the part of the patient and more joy and satisfaction on the part of the cystoscopist.

4. The technique of caudal anesthesia should be acquired and used by everyone doing cystoscopy.

Bibliography.

Brenner, E. C.: Sacral Anesthesia. *Annals of Surgery*, 1924, Vol. LXXIX, pp. 118-123.

Cathelin, F.: Les Injections Epidurales. Paris, Billiere, 1903, p. 231.

Char, Geo. Y.: Caudal Anesthesia: Report of 166 Cases. *The China Medical Journal*, Vol. XL, Jan., 1926.

Elliott, D. C.: A Report of the Fluid Levels and a Mode of Intravenous Absorption Following Caudal Injections. *Col. Medicine*, Vol. XXIII, No. VII, July, 1926.

Elliott, D. C.: Extreme Respiratory Paralysis Following Caudal Anesthesia. *West Med. Rev.*, 1925.

Elliott, D. C.: X-Ray Studies on Caudal Anesthesia and the Intravenous Absorption of Substances Injected into the Sacral Canal. *Am. Jour. of Surg.*, Vol. XL, No. VI, June, 1926, p. 139.

Goldstein, A. E., and McBee, T. J.: Caudal Anesthesia in Cystoscopy. *Jour. Urol.*, 1926, Vol. XVI, p. 85.

Haines, W. H.: Mumey, N., and Fober, E. F.: Caudal Anesthesia in Urology, A New Method for Locating the Sacral Hiatus. Intl. Clinics. Vol. II, June, 1924, p. 85.

Harris, M. L.: Nerve Blocking. *Surg., Gynec. and Obst.*, 1915, Vol. XX, pp. 193-197.

Labat, G. L.: Latest Achievements of the Art of Local, Regional and Spinal Anesthesia. *Ann. of Surg.*, Vol. LXXIV, Dec., 1921, No. VI, pp. 673-683.

Labat, G. L.: Regional Anesthesia. Philadelphia. Saunders, 1922, pp. 251-286.

Lawen, A.: Die Extradural-Anesthesie. *Ergebu. d. Chir. U. Orthop.*, 1913, Vol. V, pp. 39-84.

Lewis, B., and Bartels, L.: Caudal Anesthesia in Genito-Urinary Surgery. *Surg., Gynec., and Obst.*, 1916, Vol. XXII, pp. 261-268.

Lowsley, O. S.: Major Urological Surgery Under Sacral and Parasacral Anesthesia. *Surg., Gynec. and Obst.*, 1923, Vol. XXXVIII, pp. 688-692.

Lowsley, O. S.: The Question of Anesthesia from the Standpoint of the Urologic Surgeon. Current Researches in Anesthesia and Analgesia. Vol. IV, No. VI, Dec., 1925, p. 356.

Lundy, J. S.: Improved Syringe. *Surgery, Gynec. and Obst.*, 1926, Vol. XLII, pp. 563.

Lundy, J. S.: Regional Anesthesia for Operations in the Urinary Bladder. Proceedings of the Staff Meetings of the Mayo Clinic. Vol. II, No. VI, Feb. 9, 1927, p. 24.

Meeker, W. R., and Scholl, A. J.: Sacral Nerve Block Anesthesia. *Ann. Surg.*, 1924, Vol. LXXX, pp. 739-772.

Morehead, S. W.: Anesthesia for Minor Urological Operations. *Jour. Urol.*, 1925, Vol. XIV, pp. 557-569.

Mumey, N., and Elliott, D. C.: Caudal Anesthesia. *American Jour. of Surg.* Anesthesia Supplement. Vol. XXXIX, No. IV, April, 1925, p. 39.

Pickens, D. R.: One Hundred Cases of Sacral Anesthesia with Comment. *Jour. Tenn. State Med. Assn.*, 1916, Vol. IX, pp. 120-123.

Scholl, A. J.: Sacral Anesthesia in Urology. *Jour. Urol.*, 1921, Vol. VI, pp. 149-171.

Stoekel: Urber Sakrole Anasthesie. *Zentralbl. f. Gynak*, 1909, Vol. XXXIII, pp. 1-15.

Young, H. H.: Young's Practice of Urology. Philadelphia. Saunders. 1926, pp. 254-256.

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THE VALUE OF VITAL CAPACITY ESTIMATIONS IN THE STUDY OF HEART DISEASE.*

By A. B. HODGES, M. D., Norfolk, Va.

In most cases of heart disease dyspnea is the first symptom observed, and the tendency to shortness of breath on exertion bears a close relation to the clinical condition of the patient. As the cardiac reserve begins to decrease, the tendency to dyspnea increases, and *vice versa*, a decreased tendency to dyspnea connotes an increase in the cardiac efficiency. There are a few cases, however, in which palpitation or precordial pain are the early symptoms and dyspnea is negligible or absent, but

*Read before the Norfolk County Medical Society.

this group is small in comparison to the former.

Because of the close relationship between the tendency to dyspnea and the clinical condition of the patient, it would be very valuable if we had some method of accurately determining this tendency instead of relying on such inaccurate data as the statements of the patient, or on graduated exercises, which are impractical in decompensated cardiacs. Such a method we have in the determination of the vital capacity of the lungs.

The total amount of air that can be expired after the greatest possible inspiration is the measure of the vital capacity of the lungs.

Hutchinson, in 1846, was the first to publish a thorough study of the vital capacity of man. He studied about 3,000 people, some healthy, and some suffering from diseases of the lungs and heart, and pointed out that the vital capacity was decreased in patients with heart disease. Little work was done along this line until the World War when interest was revived by Georges Dryer. He used this method in examining applicants for the British Flying Service, and stated that it served as a decisive factor in election to, or rejection from, that service.

The late Dr. Francis Peabody, of Boston, and his associates were the first in this country to investigate the subject. In studying the production of dyspnea in normal persons and in those with heart disease, they observed that cardiacs did not respond to the production of dyspnea in the same way that normals did. The normals increased both the rate and depth of breathing, but the cardiacs increased the rate without increasing the depth to any great extent. This led them to investigate the general subject of the vital capacity of the lungs in heart disease.

Many patients with different types of heart disease and varying degrees of cardiac insufficiency were studied. The vital capacity of the lungs was found to be decreased in the majority of the subjects. An observation of far greater importance, however, was the fact that there was a close relationship between the degree of the decrease in the vital capacity and the degree of the tendency to dyspnea. If the volume of the vital capacity was expressed in terms of the percentage of normal, it was found that the following generalizations were approximately true:—Cardiac patients with a vital capacity of 90 per cent or more of the normal standards have no more tendency to dyspnea than is to be found in a similar group of healthy persons. Cardiac patients with a vital capacity of from 70 to 90 per cent of the normal almost invariably give a history of shortness of breath on moderate exertion, but most of them can lead a satisfactory, although somewhat limited, life. Patients with heart disease who have a vital capacity which is only from 40 to 70 per cent are much more restricted. Practically all become short of breath easily, and few are able to do even the lightest work. They are border-line cases and frequently become acutely decompensated. Those patients with a vital capacity below 40 per cent are acutely decompensated, usually confined to bed, and are often dyspneic even while at complete rest.

McClure and Peabody next undertook a study of the relation between the vital capacity and the clinical condition of the same patient during the course of the patient's illness. They studied twenty-four cases and made frequent notes regarding such signs and symptoms as dyspnea, cyanosis, edema, hydrothorax, congestion of the lungs, enlargement of the liver, heart rate and rhythm, and the urinary output, and made frequent determinations of the vital capacity. It was found that the vital capacity of the lungs in heart disease bears a close relation to the clinical condition of the patient. This is especially the case if the clinical condition is judged by the tendency to dyspnea. It was also shown that an improvement in the functional state of the heart is associated with a rise in the vital capacity, that when the condition of the heart is apparently remaining stationary, changes in the vital capacity are not marked, and that when there is evidence of increasing cardiac insufficiency the vital capacity of the lungs falls. During the past ten years these observations have been made many times by a number of investigators and are now generally considered as quite definitely proven.

It might be thought that vital capacity determinations would be a great aid in differential diagnosis, but such is not the case. A decrease in the vital capacity does not mean that a patient has heart disease, for any condition which interferes with respiratory move-

ments will cause a decrease in the vital capacity, such as emphysema, pulmonary tuberculosis, intrathoracic neoplasms, pneumonia, hydrothorax, pneumo-thorax, and pleurisy. However, the test is of great value in distinguishing between true cardiac weakness and effort syndrome, for the patients with the latter condition complain of weakness, palpitation and dyspnea on exertion. It has been shown by several investigators that the vital capacity is not decreased in effort syndrome.

Why is the vital capacity reduced in heart disease? In advanced cases in which there is pleural effusion and pulmonary edema, it is easy to understand how the movements of the lungs would be interfered with and the vital capacity reduced. In a great many cases, on the other hand, there is apparently no relation between the decrease in the vital capacity and such physical signs. There may, indeed, be a considerable decrease of the vital capacity in patients in whom the examinations of the lungs reveal absolutely nothing. A man with mitral stenosis, for instance, may give a history of dyspnea on walking rapidly or on going up stairs. Examination of his lungs by the usual methods and by the X-ray gives no indication of any pathologic lesion, but his vital capacity is found to be 70 per cent of normal. In such cases it has been suggested that the limitation of the movements of the lungs, which is evident from the decrease in the vital capacity, is due to an increased pressure in the pulmonary circulation with engorgement of the blood vessels and a consequent interference with the elasticity of the lungs, the distended vessels not permitting the lung to expand normally. If this be true, then the determination of the vital capacity gives us important information concerning the condition of the pulmonary circuit.

It is obvious that before any test can render its greatest service reasonably accurate, normal standards must be developed for comparative purposes. Because of wide individual variations, we know that individual standards observed in time of good health are best, but inasmuch as such standards are not available in most cases, one is compelled to resort to theoretical normal standards. Since Hutchinson began his work upon vital lung capacity, several theoretical normal standards have been presented, such as the standing height standard, the body weight standard, the surface area standard, and the chest circumference standard. Without discussing the relative merits and demerits of each method, suffice it to say that perhaps the majority of the workers in this field believe that the standing height standard and the surface area standard are the most satisfactory. In order to simplify the determinations, the tables which have been published by Myers in his little book on the vital capacity of the lungs are recommended.

Any type of spirometer may be used for determining the vital capacity. Those who have a basal metabolism apparatus will find this machine very satisfactory.

Summary

1. In most cases of heart disease the tendency to dyspnea bears a close relation to the clinical condition of the patient.

2. The vital capacity of the lungs is a good index of the tendency to dyspnea in heart disease.

3. There is a close relationship between the degree of the decrease in the vital capacity and the degree of the tendency to dyspnea.

4. The vital capacity varies with the clinical condition of the patient.

Conclusions

The estimation of the vital capacity is a great aid in the management of cardiac cases. It is also useful in distinguishing between true cardiac disease and effort syndrome.

Bibliography.

Adams, F. D., and Sturgis, C. C.: Note on the Vital Capacity of the Lungs and the Carbon Dioxide Combining Capacity of the Blood in Cases of "Effort Syndrome." *Amer. Jour. Med. Sc.*, 158: 816, 1919.

Arnett, John H., and Kornblum, K.: Vital Capacity. An Inquiry into Its Value as a Diagnostic Procedure. *Annals of Clinical Medicine*, October, 1924.

Arnett, John H.: Three Cases Illustrating the Value of Vital Capacity Charts in Diseases of the Heart, Lungs, and Mediastinum. *Medical Clinics of North America*, 8:977. November, 1924.

Burton-Opitz, Russell: The Vital Capacity of "Cardiacs." *Jour. Amer. Med. Assoc.*, 78:1686. 1922.

Drinker, C. K., Peabody, T. W., and Blumgart, H. L.: The Effect of Pulmonary Congestion on the Ventilation of the Lungs. *Jour. Exper. Med.*, 35:77. 1922.

Joannides, M.: The Effect of Dyspnea Variously Produced on the Vital Capacity of the Lungs. *Arch. Int. Med.*, 33:145. 1924.

Lemon, Willis S., and Moersch, Herman J.: Factors Influencing Vital Capacity. *Arch. Int. Med.*, 33:136. 1924.

Lemon, Willis S., and Moersch, Herman J.: Comparison of Constants for the Determination of Vital Capacity. *Arch. Int. Med.*, 33:118. 1924.

Levine, Samuel A.: Angina Pectoris—Some Clinical Considerations. *Jour. Amer. Med. Assoc.*, 79: 928-933. 1922.

Lundsgaard, C.: Determination and Interpretation of Changes in Lung Volumes in Certain Heart Lesions. *Jour. Amer. Med. Assoc.*, 80:163. 1923.

McClure, C. W., and Peabody, F. W.: Relation of Vital Capacity of Lungs to Clinical Condition of Patients with Heart Disease. *Jour. Amer. Med. Assoc.*, 69:1954. 1917.

Peabody, F. W.: Cardiac Dyspnea. *Amer. Jour. Med. Sc.*, 155:100.

Peabody, F. W.: The Vital Capacity of the Lungs in Heart Disease. *Med. Clinics of North America*, 4:1655. May, 1921.

Peabody, F. W., and Wentworth, J. A.: Clinical Studies on Respiration. The Vital Capacity of the Lungs and Its Relation to Dyspnea. *Arch. Int. Med.*, 20:443. 1917.

Peabody, F. W., Wentworth, J. A., and Barker, Bertha I.: The Basal Metabolism and Minute-Volume of the Respiration of Patients with Cardiac Disease. *Arch. Int. Med.*, 20:468. 1917.

Peabody, F. W. and Sturgis, C. C.: Clinical Studies of the Respiration. The Effect of General Weakness and Fatigue on the Vital Capacity of the Lungs. *Arch. Int. Med.*, 28:501. 1921.

Peabody, F. W., Sturgis, C. C., Barker, B. I., and Read, M. N.: Clinical Studies on the Respiration. The Effects of Exercise on the Metabolism, Heart Rate, and Pulmonary Ventilation on Normal Subjects and Patients with Heart Disease. *Arch. Int. Med.*, 29:277. 1924.

Sturgis, C. C., Peabody, F. W., Hall, F. C., and Fremont-Smith, F.: Clinical Studies on the Respiration. The Relation of Dyspnea to the Maximum Minute-Volume of Pulmonary Ventilation. *Arch. Int. Med.*, 29:236. 1922.

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THE COUNTRY DOCTOR.*

By ESTILL L. CAUDILL, M. D., Elizabethton, Tenn.

Gentlemen of the Ex-Interns' Association of St. Elizabeth's Hospital:

I wish to thank you for the honor conferred upon me, in electing me your President, and I can assure you that I will at all times do the best that I can to promote the interest of this Association.

Since the organization of this Society, I have always looked forward to these meetings with a great deal of pleasure. It is not only a pleasure to meet the old ex-interns of this hospital, and to partake of the wonderful hospitality which is provided by our host, but it is a stimulus to return and see the splendid work being done by Dr. Horsley and his excellent staff. I know that each one of us will take back to our homes new ideas gathered at these meetings, and a determination to do better and more thorough work than we have done in the past.

Since it is the custom for the President to write a paper, I shall say a few words regarding that wonderful character which has so often been referred to, but which is now rapidly becoming extinct, "The Country Doctor."

It has been a grand privilege to have lived in this generation and to have practiced medicine as a country doctor. For thirteen years it has been my lot, and not an unpleasant one, to practice in the small town and country. During this time we have seen the transition from the muddy roads, the horse and saddle bags, to the improved highways and the modern automobile. This change in transportation has been a blessing to the country doctor, for, instead of spending more than half his time in traveling to and from his patients, he now has this extra time which may be spent in recreation or study.

There has also been marked advancement in medicine and surgery during this period. The prevention and treatment of childhood diseases, especially diphtheria, scarlet fever, and the intestinal infections, has greatly reduced the mortality in children.

In this day of specialization, the up-to-date country doctor is the greatest of all specialists. He must have a fundamental knowledge of all the specialties; for to him will be given the opportunity of both seeing and examining the sick patient. He must know how to take care of emergencies, regardless of their nature, and because of his isolation, he cannot consult a specialist at the time when they are often most needed.

It requires more knowledge of human nature, and more experience over a wide field of observation, to make a first-class country doctor than the public can conceive of. He is compelled to treat cases by himself that his city brother would hesitate to take charge of. It is often necessary for the doctor to give an anesthetic and apply forceps without assistance. He must be able to do a tracheotomy or intubation, or else stand by and watch his little patient die from suffocation. There are numerous other cases I could mention which only those who have practiced in the country could appreciate.

The long hours, hard work, and poor compensation are some of the rewards of such

*President's Address delivered before the Fourth Annual Meeting of the Ex-Interns' Association of St. Elizabeth's Hospital, Richmond, Va., October 4, 1927.

a life. The compensation, however, may be of two sorts: first, the material prosperity which enables him to take care of his family; second, the satisfaction that comes from the feeling of usefulness to his country and from the knowledge of its esteem. The best evidence of the usefulness of such men lies in the esteem in which they are held in their communities. There is no place where one is submitted to more merciless scrutiny than in the small towns. There is no place where one is likely to be judged more justly for his work, and these men have always been appraised as of the highest value in their communities.

I wish I were able to write an eulogy on the country doctor and to give a picture of him as he really exists. I quote from the late Vice-President, Thomas R. Marshall, who wrote the following: "I think if service is to be the true mark of greatness in a people, all these other wonders of a wondrous age and state must pale into insignificance beside the service and sacrifice of the country doctor. Who now remembers the conditions under which he sought to minister to bodies and minds diseased? Who now, by any stretch of imagination, can bring to view the awful roads, the unhospitable houses that were called homes, the lack of furnaces, bathrooms, hot water, electricity, gas, mud everywhere, cracks in the houses everywhere, children waking in the morning with their blankets covered with snow, huge fire-places where you roasted on one side and froze on the other? And add to it all a malarial climate. Chills and fever, fever and chills, day in and day out, night in and night out. Storm and sunshine, the country doctor went his rounds."

As we pass along down the lane of life, as the shadows begin to lengthen, we may not all be permitted to live in mansions, but may we have the satisfaction of knowing that we have spent a life of service, and in a small way, have rendered some benefit to mankind.

THE PROGNOSIS AND TREATMENT OF TETANUS—WITH A REPORT OF THREE CASES.*

By R. W. UPCHURCH, M. D., Durham, N. C.

Tetanus is a most fatal disease that causes dread and horror to every physician who has so unfortunately had to treat such a malady. The fact that the prognosis is so unfavorable, and the treatment so variable and uncertain, is the reason we do not meet this calamity when it arises with any degree of certainty or assurance. Before discussing the prognosis and treatment of tetanus, it is best we review its clinical picture.

Tetanus is an acute infectious disease, characterized by tonic spasms of the muscles of the body, caused by absorption by the nervous system of the toxin which is given off by the tetanus bacillus. The bacillus is found in the soil most commonly, and is especially abundant around stables or where manure has been deposited. It grows under ordinary temperatures and anaerobic conditions. The bacillus produces spores of a most resistant type and a toxin, the most virulent of all poisons. The disease usually follows an injury in which the wound has become infected or contaminated with dirt. These wounds are most commonly seen on the extremities. Lacerated, punctured, and suppurative wounds are most readily attacked by the bacillus, due to the anaerobic conditions present.

The average incubation period is from five to twelve days; however, it may be from one to thirty days. The onset of the disease is variable. It may begin with restlessness, giddiness, headache, increased irritability, change in the facial expression, or darting pains in various parts of the body. Soon after this, unmistakable symptoms develop. Difficulty in swallowing and mastication, with stiffness of the jaws, is usually the first thing the patient complains of. This gradually develops into tonic spasms of the muscles in this region, causing the so-called "Sardonic grin". The eyebrows are arched, the eyelids partially closed, and the lips are drawn tightly across the teeth. In some cases the jaw becomes fixed, a condition called "trismus". The stiffness passes on to the neck and the muscles of the abdomen and extremities. Later, these muscles are thrown into tonic spasms by peripheral irritations, such as light, draft, sounds, touch of bed clothing, and swallowing. The muscles of the back are most affected, causing the well-known position of opisthotonos. Clonic spasms develop, affecting the diaphragm and muscles of respiration, causing cyanosis, rapid breathing, flat-

*Read before the Ex-Interns' Association of St. Elizabeth's Hospital, Richmond, Va., at the Fourth Annual Meeting, October 4, 1927.

tened lips, exposed teeth, and a facial expression of pain and agony. These paroxysms become very frequent, as often as every three minutes. Even in between the attacks the patient is not relaxed. The temperature may be normal or as high as 105 or 106 degrees. The course is very rapid, and death may take place during a spasm from heart failure, asphyxia, or exhaustion. The diagnosis is unmistakable with the history of trauma and the gradual development of such marked symptoms.

I am reporting three cases treated by Dr. Foy Roberson and myself, at Watts' Hospital, within the last nine months, before discussing the prognosis of tetanus and its treatment.

Report of Cases

Case 1.—Master R. R., age 12 years, was admitted to Watts' Hospital on November 5th, 1926. Eighteen days prior, his right hand was caught in a corn shucker, amputating all four fingers at the base of the first phalanges. The hand was treated by his family physician and was healing nicely. No prophylactic dose of tetanus antitoxin was given. Four days before admission he complained of pain in his back and jaws. Chewing became difficult and at times his jaws would lock on deglutition. Twenty-four hours before admission he began having muscular spasms of the body, which developed into typical tetanic convulsions, occurring every ten minutes and lasting from thirty to sixty seconds.

On admission, his temperature was 100, pulse 100, and leucocyte count 9,600. His complexion was florid and expression anxious. The pupils were dilated. His jaws and neck were stiff; he had convulsions every few minutes, the body assuming the position of opisthotonos. The right hand was granulating nicely and there was no evidence of infection.

The patient was put in a dark room and given morphine, grs. 1/6, every three hours. Bromides and chloral hydrate were given per rectum. 10,000 units of tetanus antitoxin were given intraspinally and 20,000 units intravenously.

On November 7th, his condition remained about the same. 10,000 units of tetanus antitoxin were given intravenously.

On November 8th, 4,000 units of tetanus antitoxin were given intraspinally and 6,000 units intravenously; his condition seemed slightly improved.

On November 9th, 10,000 units of tetanus antitoxin were given intravenously, 5,000 units intraspinally, and 5,000 units intramuscularly. His condition remained the same.

On November 10th, 5,000 units of tetanus antitoxin were given intravenously. He seemed much improved on this date. He was able to take fluids freely and had very few muscle spasms.

On November 11th, 5,000 units of tetanus antitoxin were given intravenously. His condition became worse. He became more restless and was delirious at times.

On November 12th, he passed into a deep stupor, his pulse became rapid and weak. His temperature rose to 105 degrees. A blood transfusion and glucose intravenously failed to sustain the rapidly failing circulation and he died on November 13th, seven days after admission. The outcome of this case might have been different if an earlier diagnosis had been made and the proper treatment administered sooner.

CASE No. I.

Days in Hospt.	Tetanus Intramuscularly	Antitoxin Intravenously	Antitoxin Intraspinally
1st		20,000	10,000
2nd		10,000	
3rd		6,000	4,000
4th	5,000	10,000	5,000
5th		5,000	
6th		5,000	
7th		Died	
Total	5,000	56,000	19,000

Total Tetanus Antitoxin, 80,000 Units.

Case 2.—Master C. E., age 13 years, was admitted to Watts' Hospital on December 1, 1926, with a compound comminuted fracture of the left tibia. The wound was cleaned, fractured particles of bone removed, and the edges closed around a rubber tissue drain. A plaster cast was applied to the leg and a prophylactic dose of 1,500 units of tetanus antitoxin were given.

On December 13th, a new cast was applied to the leg. The wound was clean and granulating nicely. His temperature and pulse were normal. The patient was convalescing satisfactorily.

On December 15th, two weeks after date of

injury, he complained of stiffness in his jaw and inability to open his mouth wide enough to eat freely.

On December 16th, he complained of soreness in his right arm, pain in his back and stiffness of his neck and jaw. He became very restless and developed typical symptoms of tetanus, already described above. 10,000 units of tetanus antitoxin were given intramuscularly and 10,000 units intraspinally.

On December 17th, 15,000 units of tetanus antitoxin were given intramuscularly. Although the patient was desensitized to the serum, he had a severe reaction. His temperature rose to 105, and pulse to 160.

On December 18th, his condition seemed better; temperature 101, and pulse 90.

On December 19th, his condition remained about the same; however, he was able to take fluids freely.

On December 20th, his temperature was 100 and pulse 90. His condition was improving.

On December 21st, he became more restless and 10,000 units of tetanus antitoxin were given intramuscularly.

On December 22nd, 10,000 units of tetanus antitoxin were given intraspinally. The patient had another reaction, his temperature reaching 104, and pulse 100. Restlessness and rigidity seemed more marked.

Following this date, his condition gradually improved. Within ten days, stiffness of the neck and body rigidity had entirely disappeared. On January 3rd, eighteen days from onset of the disease he was eating soft diet and free from any symptoms of tetanus. However, his temperature was 101, pulse rate 100, and leucocyte count 10,000. This was due to a slight infection in the leg wound, which had not cleared up.

On January 20th, fifty days after admission and thirty-five days after development of tetanus, the patient was discharged as cured. His temperature was 99.2 and pulse 80. Today he is up and walking and appears normal in every way. Apparently, he suffered no ill effects from the disease. This is a rather atypical case, developing after having had a prophylactic dose of tetanus antitoxin, and running an attenuated, but prolonged course.

CASE No. II.

Days in Hospt.	Tetanus Antitoxin Intramuscularly	Intravenously	Intraspinally
1st	10,000		10,000
2nd	15,000		
3rd			
4th			
5th	10,000		
6th			10,000
7th to 35th day, no antitoxin was administered.			
Total	35,000		20,000

Total Tetanus Antitoxin, 55,000 Units.

Case 3.—Master F. D., age 6 years, was admitted to Watts' Hospital on August 11, 1927. He complained of pain and tenderness in the right lower abdominal quadrant, of twelve hours' duration. His temperature was 99, pulse 70, and leucocyte count 10,000. He was very rigid and tender over his appendix. A diagnosis of acute appendicitis was made. A McBurney incision was made and, on opening the peritoneal cavity, free fluid was found. The appendix was acutely inflamed and was removed in the usual way.

On the following day, August 12th, at 4 P. M., his temperature suddenly rose to 103 and pulse to 150. His jaw and neck were rigid and the slightest movement or examination caused stiffening of the body muscles. He became delirious and developed the typical "Sardonic grin" of tetanus. On questioning his mother, it was learned that two weeks before admission he was scratched by a cat on the right arm. The wound was not treated by a physician and no prophylactic dose of tetanus antitoxin was given. The wound became infected and contaminated with dirt several times. On examination a clean fresh scar was found on the right arm in evidence of the injury. A diagnosis of tetanus was made and treatment instituted immediately. Enough bromides and chloral hydrate were given by rectum to exert their physiological effect. Codeine, gr. ¼ hypodermically, was given every four hours, and 500 c.c. of 10 per cent glucose in Ringer's solution were given intravenously to maintain body fluids. 20,000 units of tetanus antitoxin were given intraspinally and 10,000 units intravenously.

On August 13th, his temperature was 104, and pulse 130. Although he was well under the influence of bromides and opiates, he had clonic spasms of the diaphragm and muscles of respiration, causing asphyxiation and tonic spasms of the body muscles, with the position

of opisthotonos every three minutes. 30,000 units of tetanus antitoxin were given intraspinally, 10,000 units given intravenously, and 10,000 units intramuscularly. 500 c.c. of 10 per cent glucose in Ringer's solution were given intravenously.

On August 14th, his temperature was 104, and pulse 140. The convulsions had diminished in severity and frequency. 30,000 units of tetanus antitoxin were given intraspinally and 10,000 units intravenously. 600 c.c. of 10 per cent glucose in Ringer's solution were given intravenously.

On August 15th, his temperature was 99, pulse 110, and his convulsions were less frequent, coming every 30 to 60 minutes.

On August 16th, his condition seemed improved. He was able to take fluid by mouth and had only a few body spasms.

On August 17th, five days after the development of the disease, he had no convulsions and was able to take soft diet; his temperature was 99, and pulse 90.

On August 29th, seventeen days after the onset of tetanus, the patient was out of bed and eating light diet; his temperature was normal, and pulse 110. He was discharged as cured on September 5, 1927, twenty-four days after admission to the hospital. I have seen the patient several times since this, and he appears to be normal in every respect.

CASE No. III.

Days in Hospt.	Tetanus Intraspinally	Antitoxin Intravenously	Intramuscarly
1st	20,000	10,000	
2nd	30,000	10,000	10,000
3rd	20,000	10,000	
Total	70,000	30,000	10,000

Total Antitoxin, 110,000 Units.

I have reported three cases of tetanus, all different, different in severity, treatment and outcome. To have determined the outcome or method of treatment in the beginning would have been difficult. All cases cannot be treated alike, as there is no routine treatment. We have to handle them individually and give treatment according to their needs.

While these cases reported form too small a series to draw definite conclusions, we are convinced, however, that an early diagnosis and immediate intraspinal injections of antitoxin give us the best promise of a cure. For example, Case No. I was too far gone before treatment was begun and, therefore, nothing proved efficient for cure. In the second case, the amount of antitoxin used intraspinally and intravenously was sufficient, as a dose was given intraspinally immediately to prevent further entry of toxin into the spinal cord, and a dose was given intravenously to neutralize the toxin in circulation. No more antitoxin was necessary, as the patient had had the usual prophylactic dose and the disease was of an attenuated form. In Case No 3, we were able to demonstrate clearly the efficacy of intraspinal injections of antitoxin. This patient had no prophylactic dose of antitoxin. The disease was very acute and ran a stormy course. The fact that he is living today, I believe, is due to the early diagnosis and the immediate injection of antitoxin intraspinally and intravenously during the first three days of the disease.

Dr. Ashhurst, in his article, "The Prognosis of Tetanus," paints the following picture of intraspinal injections of antitoxin, which I will quote as follows:

"The patients who recover from tetanus without receiving antitoxin by this route are exceedingly few; those who die if this treatment is used promptly are also very few. To refuse to employ antitoxin by the intraspinal route is, in the present state of our knowledge, absolutely unjustifiable. To use intravenous or the subcutaneous route alone is as sensible as it would be to set a rabble of men and boys chasing a flock of sheep with the object of preventing them from entering a certain gate. The rational thing to do is to station a strong man at the gate, and if a few sheep have passed inside before he gets there, he can head off the rest of the flock; while all the rabble can do, chasing them from behind, is to grab the hind legs or the tails of the stragglers. The toxin circulating in the blood is like a flock of sheep; it is trying to enter the spinal cord along the motor nerves, to the peripheral ends of which it is carried by the blood stream. Intravenous injections do much good, it is true, but they only overtake the toxin from the rear. The antitoxin injected intraspinally, however, is, I believe, able to head off further ingress of toxin into the cord."

This illustrates beautifully the principles involved in our most modern method of treatment, and until we all follow the principles

pictured by Ashhurst, we cannot expect to lower the mortality rate of tetanus. Statistics of the mortality rate of tetanus vary from 30 to 80 per cent. One of the old sayings that convulsions following an injury usually prove fatal is true until this day, if we neglect to give prophylactic doses of antitoxin, when indicated, or fail to recognize the disease in its early stages.

In preventing and treating tetanus, remember the following facts:

1. Give a prophylactic dose of antitoxin following all injuries.
2. Give a second prophylactic dose of antitoxin in all cases of compound fractures, eight days after injury, as by this time the first dose has been eliminated.
3. Make an early diagnosis.
4. Institute early treatment; clean the wound and prevent absorption of toxin with an intramuscular injection of antitoxin in this area; give sufficient antitoxin intravenously to neutralize the toxin in circulation: give sufficient antitoxin intraspinally to neutralize the toxin already absorbed by the central nervous system; prevent dehydration and sustain body fluids by administration of intravenous fluids; give sufficient narcotics and sedatives to keep the patient quiet.
5. The amount of antitoxin administered intraspinally and intravenously depends upon the individual case; however, give all that will be required within the first few days of the disease. Repeated large doses of antitoxin late in the disease have no value.

BIBLIOGRAPHY.

1. Ashhurst, A. P. C.: Prognosis of Tetanus, *J. A. M. A.*, 87-2089, (Dec. 18), 1926.
2. Fitzgerald, J. G.: Tetanus, Nelson Loose-Leaf Living Medicine, Vol. II, 131.
3. Osler & McRae.: Practice and Principles of Medicine, 9th Edition, 143, 1923.
4. DaCosta: Modern Surgery, 5th Edition, 224, 1921.
5. Ashhurst, A. P. C., and Johns, R. L.: The Rational Treatment of Tetanus, *Amer. J. Med. Sc.*, 77:146, 1913.

TOXIC ADENOMA WITH HEART FAILURE AND EDEMA—REPORT OF CASE.*

By W. C. CAUDILL, M. D., Pearisburg, Va.

Mrs. K., white, married, aged 45, entered the hospital August 1, 1927, complaining of weakness, shortness of breath, palpitation of the heart, and swelling of the feet, legs, and abdomen.

Family History. Father died at age 77, from some stomach ailment. Mother died at age of 78, from heart, stomach and kidney trouble. Three brothers, all living and in good health. One sister living, in good health. One sister dead, cause unknown.

Past History. Patient had pneumonia in early childhood, and a moderately severe attack of "flu" in 1918. No history of rheumatism or septic sore throat, or tonsillitis. Has had a goiter for the past 20 years.

Present Illness. The present illness started about 2 years ago when she become extremely nervous, and was affected very much by rapid irregular beating of her heart. At this time she had shortness of breath and noticed slight swelling of her feet and ankles. After several weeks' rest and some medical treatment, she improved and continued to feel very well until about 4 months before entering hospital. Early in the spring she began going down again. The heart gave her most trouble of all. It was pounding and irregular, and dyspnea became more and more marked, until she was unable to rest lying down. She also became quite nervous and noticed that her feet began to swell, which gradually increased, and extended up the lower limbs to the body.

Physical Examination. The patient, a female of middle age, was pale, nervous, had an anxious expression, and presented the picture of an extremely sick woman. There was marked dyspnea with an almost constant hacking cough. She was unable to lie down, and her feet and legs were swollen to an extreme degree. The abdomen contained free fluid, and resembled the appearance of a 9 months' pregnancy. The edema of the skin and subcutaneous tissues continued well up on the side of the chest, and there was definite congestion of the base of each lung. The heart was rapid, very irregular, and only the first sound could be heard. There was marked tremor of both hands, but no exophthalmus. The thyroid showed a plus 2 enlargement on a basis of 4, and was irregular and nodular in appearance. The basal metabolic rate was plus 25; the urine negative; blood pressure 150/100; and weight 150 pounds.

*Read before the Ex-Interns' Association of St. Elizabeth's Hospital, Richmond, Va., at the Fourth Annual Meeting, October 4, 1927.

Diagnosis. Toxic adenoma with heart failure and edema, fibrillating heart.

Course. The patient was put on Lugol's solution, minims 20 three times daily; codeine sulphate, gr. 1 every 4 hours, and given 1 c.c. of novasurol intramuscularly. Fluids and salts were restricted. On August 11, 1927, ten days after entering the hospital, patient had reduced in weight from 150 to 113 pounds, the edema having been entirely removed; she was resting comfortably in a recumbent position, and had no shortness of breath. The heart had quieted down considerably, but was still irregular. The basal metabolic rate at this time was plus 10. Thyroidectomy was performed under local anesthesia on August 13, the patient exhibiting only a moderate reaction. Improvement from this time was steady and continuous, and the patient was discharged from the hospital on August 27, with temperature 97.2, pulse 78, respiration 18. On September 10, her weight was 117 pounds, basal rate minus 10; condition excellent.

On October 3, blood pressure was 130/70; pulse 90. There was still a moderate irregularity of the heart, but no edema, and the patient went about, doing her household duties comfortably.

While thyroidectomy did not remove the damage already done to the heart, I feel that it removed the greatest source of poison, and has certainly given this patient a much better prognosis than if she had been sent home without her thyroid being removed.

ETIOLOGY OF SCARLET FEVER AND THE VALUE OF THE DICK TEST COMPARED TO PHARYNGEAL CULTURES.*

By J. S. WEITZEL, M. D., Richmond, Va.

This paper is presented to stimulate a discussion upon the possibility of altering the quarantine period of scarlet fever patients and those exposed to scarlet fever, in the hope that some concrete plan may be arrived at whereby school children may be safely released from quarantine earlier than at present, saving them a great loss of time from their studies, which I feel is quite a consideration for those in the upper grades as well as for high school students.

In summarizing the extensive investigation carried on by Lees during January, February and March, 1926, at the University of Minnesota, he found that in 48 patients with scarlet fever, 15, or 31.2 per cent, had negative Dick tests at the onset of the disease. A negative test, therefore, does not seem to be a reliable index of immunity to the disease, and cannot be relied on as an aid in the diagnosis of doubtful cases of scarlet fever.

The Dick test was positive in 49.8 per cent of 530 students from rural Minnesota homes, with an average of about 17 years.

Sixty-three per cent of Dick positive reactors were rendered Dick negative by one injection of 3,000 skin test doses of toxin detoxified with 2 per cent sodium ricinoleate.

In the examinations concerning Dick's reaction in infancy conducted by Malmberg and Jacobsohn, the results obtained by Dick and Dick, with the reaction discovered by them, led them to the following conclusions:

"1. Individuals who have suffered from scarlet fever possess immune bodies and therefore react negatively.

"2. Individuals who have not suffered from scarlet fever may either react positively and be receptive to the infection, or may react negatively, owing to natural immunity, and be non-receptive to scarlet fever.

"3. At the onset of scarlet fever, in the first week, the reaction is positive; later, it becomes negative. A positive reaction in the first days is an aid in diagnosis.

"These conclusions have been modified in various countries, according to the experiences collected there; this is especially the case with the first and third conclusions."

The authors investigated the occurrence of Dick's reaction at the various periods of infancy in regard to previously suffered scarlet fever, thus controlling the researches made in other countries. Furthermore, they examined the conduct of the reaction in repeated tests, an extraordinarily important question, not yet discussed, so far as is known to the authors, in the literature.

The Dick reaction studied in 1,200 children of all ages under 15 years was positive in 66.8 per cent, negative in 24.2 per cent, and indeterminable in 9 per cent. The material was not selected. The toxin was used in a dilution of 1:400. This dilution proved to give the least pseudo-reaction. The frequency of the positive reaction at the various periods of in-

*Read before the Richmond Pediatric Society, November, 1927.

fancy varied greatly. Only 16.4 per cent positive reactions were observed within the first 6 months of life; this figure rapidly rose within the second half year and reached the highest point at 5 years of age.

These results correspond with those found by other authors—Bokay, Kramar, Hober-Orel, Frankel-Margolis, and others; only Zingher found a considerably higher percentage in the first half year. Infants at this age very seldom suffer with scarlet fever, a fact which is in accord with the low percentage of positive reactions at this age. The reason of this must be considered as unexplained, since the theory of transmission of antibodies from the mother to the infant is contradicted by the fact that mothers of Dick negative infants often have a positive reaction and because twins sometimes have different reactions.

The tables showing the relation of a negative reaction to previous scarlet fever give the following results. Eight out of 802 Dick-positive children had suffered with scarlet fever, 17 could not give certain data, but of the 290 Dick negative individuals, 222 (76.6 per cent) had not had scarlet fever. The cause of the negative reactions in the second group may be the presence of natural immunity or one acquired after abortive infection. Considering the question from a different view point, tables were made showing how many Dick-positives there were among the children who had surely had scarlet fever. Kundratitz and Okell-Parish found 46 and 65 per cent respectively, Dick and Dick 9.3 per cent, Bokay 6.6 and 2.7 per cent, and Nobel and Orel 10 per cent; the authors found 11 per cent among their material. This makes an average of 90 per cent negative reactions in children who had had scarlet fever. This figure is a strong support for the specificity of Dick's reaction. For the explanation of the relatively few contradictory cases, the clinical fact of repeated occurrence of scarlet fever in one individual is adduced.

The authors conclude that a positive reaction may be considered positive evidence, while a negative reaction should probably be judged more cautiously; it calls for a repetition of the test.

In Friedemann's work on the Bacteriologic Diagnosis of Scarlet Fever, he states that the determination of hemolytic streptococci in the pharyngeal smear preparation is not sufficient for the diagnosis of scarlet fever. Reichenmuller showed that hemolytic streptococci are also present in angina, pharyngitis, etc. The bacteriologic diagnosis is, however, of value after examination in convalescence. If, during this time, the pharynx is free from hemolytic streptococci after several examinations, it can, with the same certainty as in diphtheria, be assumed that the infectiousness of the individual has disappeared. On the other hand, a mistake is practically impossible when considering all the hemolytic streptococci which are found in scarlet fever convalescents as scarlet fever streptococci.

Systematic examinations showed that the hemolytic streptococci are most frequently found in the tonsils and the posterior pharyngeal wall, while they are not found at all, or only infrequently, upon the hard palate and upon the buccal mucous membrane.

The authors observed that patients still showed 100 per cent of hemolytic streptococci upon the tonsils 6 weeks after discharge from the hospital. This striking result had been due to infection of the scarlet fever station by scarlet fever streptococci which always caused reinfection of the patients.

The epidemiologic results are in accordance with the bacteriologic results. The authors observed that a change of hemolytic streptococci into green streptococci and a retrogression into hemolytic true scarlet fever streptococci is possible. Their results show, however, that such sources of mistakes are not of great practical importance. The examination showed that the bacteriologic control guarantees a much greater safety against the spread of the disease than the schematic termination of the isolation after 6 weeks or after the desquamation.

Investigations showed that the serum for scarlet fever does not shorten the infectiousness of the disease. The cases which were treated with serum lost their streptococci no sooner than the non-treated cases.

In Johan's article in the *Journal of Immunology*, January, 1927, pertaining to his conclusions drawn from the different degrees of the Dick skin test reaction, he feels the test should be recorded in degrees of positive reactions rather than only as positive and negative distinctions. There is no sharp dividing line between positive and negative reactions; there are border-line reactions.

The author tested 34 children on the first to the fifth day of their illness, and 77 per cent

were found to be positive with 0.1 c.c. of toxin dilution of 1:1000.

A toxin dilution which had been inactivated by heat was used as a control in each of 17,000 skin tests. It was found that 5.3 per cent of all reactions were pseudo-reactions. Reactions giving an area of redness at least 10 m.m. in diameter were alone considered as positive. The positive reactions were grouped according to the size of area of redness.

In order to reduce the error due to difference in reading the reactions, small glass plates—on which circles of 10, 20 and 30 m.m. were etched—were used in measuring the sizes and degrees of the reactions.

It was found that the percentage of weak positive reactions is lower in the first few years of life. After the seventh year there is a very much larger percentage of weak positive reactions. It is possible that the differences in results obtained by various observers in immunizing with the same dosage may depend on the varying ratios between weak and strong positive reactions.

Smith's article in the *Archives of Disease in Childhood*, June, 1927, follows:

"It was desired to ascertain whether *S. hemolyticus* could be found in the throat cultures of patients who were Dick positive and also to determine whether the various strains could be separated into scarlatinal and non-scarlatinal types.

"It has been shown that scarlatinal types cannot be distinguished by agglutination and agglutinin-absorption tests from strains of hemolytic streptococci occurring in other infections and tests were made to determine if the exotoxins were neutralized by scarlatinal horse-antitoxin.

"The Dick test was applied to 7 nurses and 13 patients in a scarlet fever infected children's ward and also to 40 patients convalescing from diphtheria. At the same time swabs were obtained of the secretions of the throat.

"In a series of 60 cases, 27 gave a positive Dick test and 23 a negative one.

"Eight cases harboring *S. hemolyticus* gave a negative Dick test, while six cases gave a comparatively feeble positive reaction varying between 1+ and two++.

"Certain individuals, therefore, who are negative or who give slight Dick-positive reactions, can be carriers of hemolytic streptococci capable of producing a true exotoxin which can be neutralized by a horse scarlet fever antitoxin. This may indicate that those individuals who give feeble postive Dick tests and who harbor hemolytic streptococci are really immune to scarlet fever, or that they are protected by a local immunity reaction."

Everhart, in the *Atlantic Medical Journal*, January, 1927, states that numerous theories have been advanced as to the cause of scarlet fever; some believe the causative agent to be of the pathogenic bacteria, others a filtrable virus. From the evidence submitted by many, it must be believed that in scarlet fever we are dealing with an organism differing immunologically and serologically from others of the same group.

Until the work of the Dicks in producing the disease experimentally in human, no definitely satisfactory results in experimental scarlet fever had been reported.

During the early months of life, practically all children are immune who have immune mothers. Susceptibility as determined by the Dick test on large groups of children may be given as 60 per cent under 5 years of age, 30 per cent between 5 and 10 years, 15 to 20 per cent between 5 and 10 years, 15 to 20 per cent between 10 and 20 years and about 15 per cent for all adults. Immunity may be established by having had one attack of the disease, or through having had frequent small doses of streptococcic infection, or by the development by means of injections of scarlet fever toxin or antitoxin. Doses of 500, 1,500, 5,000, 15,000 and 20,000 skin-test doses at one-week intervals will give protection to most susceptibles for 2 to 3 years, probably longer.

The highest age incidence is between 3 and 15 years, the greatest number occurring up to 6 years.

The infective agent comes from the secretions of the nose and throat, or from purulent secretions of complications. Desquamation is no longer regarded as a source of danger. What part is played by the carrier is not yet definite.

It might be interesting to present a condensed "Review of the Recent Italian Literature," published in the March, 1926, issue of the *Archives of Pediatrics*.

The following review of the Italian literature relating to scarlet fever and measles is confined to the presentation of but one side of a controversial subject, because the Italian

literature, which alone is being reviewed, has presented no conflicting opinions. It seems that the work is important enough to be presented to the American profession for their critical perusal.

Within the past five years the pediatric schools of Italy, especially those of Rome, Naples and Palermo, have come to the belief that they have demonstrated the etiology of scarlet fever and of measles. Further, they are convinced that they have isolated organisms which are specific agents of these morbid affections, and the organisms isolated are not streptococci.

These Italian investigators state that they have been able to satisfy Koch's laws in the relation of these organisms, isolated from the blood, the naso-pharyngeal secretions, bone marrow, spinal fluid, and desquamating epithelium of patients in the early stages of the disease, to scarlet fever and to measles.

They report uniform success in producing the disease in young rabbits and in humans, by injecting patient's blood, filtrates from naso-pharyngeal secretions of those affected, and cultures of the organisms made on selected media, provided that the specimens were taken from patients during the exanthematous stage of the maladies. Recovery of the organism from the animals or humans suffering from the experimental disease is also claimed. In human volunteers the disease produced is undistinguishable from scarlet fever or from measles, as the case may be. Vaccines prepared from cultures of the organisms have been used both for cure and for protection with what is reported as entire success.

As these findings are so at variance with the views of American observers, it has seemed that a review of the Italian literature of the past five years, as it relates to the etiology and vaccine treatment of measles and scarlet fever, might be of interest.

The Italians are entirely familiar with the work of the American investigators and freely admit its accuracy and its great value. However, they are very critical of many of the inferences drawn by the Dicks, by Dochez and their co-workers from the observed phenomena, and are in profound disagreement with conclusions which endow the hemolytic streptococcus with any role more important than that of a complicator in scarlet fever or in measles.

Ritossa withdrew urine under sterile precautions from patients in the exanthematous period of scarlet fever and, after 24 to 36 hours' incubation, invariably demonstrated the presence of the organisms which the Italians believe to be the specific cause of the disease.

More striking still are the findings that, while the urine of convalescents was uniformly negative, those of individuals with post-scarlatinal nephritis were always positive for the organism of Di Cristina.

A further point of interest lies in the report that scales of desquamating epithelium, macerated 12 to 14 hours in normal salt solution, contained the organisms which could be grown from the scale treated in this way even though for four months preceding the experiments they had been stored in sterile petri dishes in the laboratory (Sindoni).

In their last work on scarlet fever, Di Cristina and Caronia report a total number of about 6,000 observed children who had been exposed to contagion but who were protected by inoculation with the vaccine prepared from Di Cristina's or Caronia's organisms; of these but two per cent contracted the disease.

In contrast to this most interesting work carried on by Italian investigators, it is of great interest to summarize the work done by Murphy, of Minneapolis:

"1. In a school with a total enrollment of 1,927, 404, or approximately 21 per cent, were given the Dick test for susceptibility to scarlet fever.

"2. Of the 400 tested, 304, or 75 per cent reacted positively and 100 reacted negatively.

"3. Of the 304 susceptibles, or Dick-positives, who were given the inoculation with scarlatinal toxin for active immunization, 232, or 76 per cent became Dick-negative; 31, or 10 per cent, remained positive, and 41, or 13 per cent, discontinued the inoculations, moved away, or were otherwise lost track of.

"4. Adding our 232 cases rendered immune by the inoculations to the 100 determined immune by the original test, we now have 332 out of a total of 1,927 members of our school system, or about 17 per cent immune, at least to the degree evidenced by a negative Dick test.

"5. The reactions shown in this series of cases to the somewhat high dosage of the scarlatinal toxin, while moderately severe in an occasional case, yet are relatively few, only

21 in 304 treated, and should constitute no valid contraindication to its use.

"6. We found no definitely determinable relation between different age groups and either susceptibility to scarlet fever or the degree of active immunity obtainable.

"While it is too early to draw conclusions, it is interesting and perhaps pertinent to note that to date we have had only three cases of scarlet fever reported in our district so far this year, two of which were in boys past school age and not in school,—this, as contrasted with 11 cases, all in school, reported by this time last year."

1900 *Grove Avenue.*

USE AND ABUSE OF LABORATORY.*

By J. LAWN THOMPSON, A. M., M. D., Washington, D. C.
Chief of Medical Service, Providence Hospital; Consulting Physician, Casualty Hospital; Clinical Professor of Medicine, George Washington University; Clinical Professor of Medicine, Georgetown University.

In the following comments I hope you will bear in mind the fact that I wish in no way to detract from the wonderful adjunct which the laboratory is to the general practitioner or internist. To do so would be pusillanimous and would exhibit a tendency to retard the scientific progress of medicine rather than to bring it up to the standard which it so justly deserves—the standard which the great men of the past worked and died for, but a standard which has a dark shadow looming in the distance, which, if not headed off, will surely in time dislodge the keystone of the profession and so segregate the different branches of medicine that it will retain but little semblance of its pristine glory.

The foundation of the medical profession should be, and was for many years, physical diagnosis, clinical diagnosis. The reputation of the big men of the past depended upon their ability to diagnose a case by the then well-known method of observation, examination and history-taking. Inspection, palpation, percussion and ausculation, the fundamental principles of physical diagnosis, was a method of procedure that was the extent of their knowledge and was used to such great advantage that many of their diagnoses have stood the test of years and have laid the working basis for many of the past and most of the present-day ailments. Little improvement has been made in the diagnosing of the majority of present-day ailments, as far as physical diagnosis is concerned, and this diagnosis was made long before the advent of the laboratory.

The foregoing statement is made purely and simply to awaken the family physician to the fact that his services are drifting, we know not where. The laboratory has made this a day of specializing; it has made conditions so easy that most physicians will submit the patient to the laboratory man or the specialist rather than depend upon his own ability to study out the case by careful observation and thorough physical examination.

The lay press and magazines have so educated the people that they ofttimes choose their own specialist or laboratory man, while internists or family physicians are sitting back allowing the specialist and press to engulf their identity and get all the glory that should be theirs. The internist or family physician should be the man to get the honors, but we are only getting the crumbs, and very soon will not have even the crumbs.

In the cities the so-called diagnostician, or consultant, is not in reality a diagnostician at all. He is one of a group. The patient is sent to him, or selects him because of his fame. The history of the case is taken by his secretary; his temperature, pulse and respiration are taken by the nurse; his urine, gastric contents, dejecta, etc., are examined by the technician; the heart and lungs are examined by the radiographer. When the full report is in, the diagnosis is made. Group practice!

The State health departments have done wonders for the community, but we have become so dependent upon these laboratories that we do not depend upon ourselves. I venture to say that we would find, by careful examination, that more than 90 per cent of our cases could be diagnosed, and should be diagnosed, or a tentative diagnosis made before we call in the assistance of the laboratory, and then the laboratory findings should be used as a check-up only.

Clinical findings are by long odds more sure than laboratory findings. To prove this, let us cite a few instances only. The Widal for typhoid is frequently absent, even though the history and clinical findings make us sure of the disease, the Widal not showing in many cases until long after the patient is well.

The malarial organism is not always found, even in the best equipped laboratory; still,

*Read before the Section on Internal Medicine, Medical Society of the District of Columbia.

often the clinical picture is so marked that there can be no doubt.

The persistent absence of the tubercular bacilli in the sputum will lead us astray if we neglect the clinical and physical findings.

The blood Wassermann is a delusion and a snare; it is frequently absent when all else points to lues.

The anemias, as far as the blood pictures are concerned, are still in a chaotic state, and the urinalysis is not now holding the important place as of yore.

The X-ray is a wonderful adjunct when it works out, but we have become too dependent upon it; the clinical gall stones do not always show up; the kidney stone is a will-o'-the-wisp,—now we see it, now we don't and still renal colic goes merrily on. The X-ray of the gastro-intestinal tract will frequently lead us astray when the pathological condition is advanced—too far advanced. In many instances it shows up well, but clinical symptoms of gastric disturbances are often present when the report comes back from the roentengenologist that the picture shows nothing. The medical man is then disconcerted and the stomach case floats from one to another.

But it is in the examination of the heart and lungs that we are likely to make our greatest mistakes,—the mistake of not being familiar with our physical diagnosis. Thatcher, in revising Flint's physical diagnosis, states that of the 86,000 French soldiers discharged during the first year of the late war for tuberculosis, only twenty per cent were subsequently found to be suffering from that disease. Of the first 1,000 soldiers of our forces who went through expert clearing stations diagnosed as tubercular, only one hundred and twenty-five were later shown to have tuberculosis. Immediately following the war many of our soldiers were sent to tuberculosis hospitals largely on X-ray diagnosis alone, many inactive cases being mixed with active cases. What a commentary on modern physical and clinical diagnosis!

On our medical service at Providence Hospital the internes are instructed to make a thorough history of the case in hand, a careful physical examination and a tentative diagnosis before any laboratory work at all is done. This is especially true in diseases of the heart and lungs. It is surprising how a picture of the heart or lungs can lead us astray. If we are dependent upon the X-ray for pulmonary troubles, when and how are we to determine the active from arrested or healed conditions, since the patient cannot be X-rayed every day, and many times the clinical and physical findings do not coincide with the picture. As a check-up they are fine; as a reference at some future time they are of inestimable value; as a frank diagnostic measure they are, in my opinion, not what they are supposed to be.

I am glad to say that the modern hospital requests and even demands that a physician entering patients must write a tentative diagnosis, and a final diagnosis when the individual leaves the institution.

In discussing the theme of this paper with some of the best and most conscientious laboratory men, I find that they are a unit in uring the family physician to brush up on his clinical and physical diagnosis, as it would relieve them of great responsibility, and the intelligent discussion of the case in hand would make the work jointly very much more pleasant.

The economic aspect must also be taken into consideration, for, when a full laboratory examination is ordered, it dips well into the pocketbook of the patient and frequently causes much criticism by the sick one. While talking to one of our leading laboratory men, an order came in over the phone: "Doctor, I am sending a patient to ——— hospital. I wish you would have a hg.r.c., differential, complete blood chemistry, malarial examination, complete urinalysis, Wassermann and Widal." Doctor Doe asked the attending physician the nature of the case; he stated that he did not know, as he had only seen the patient that morning and would like as much of the report as possible by the next day. This laboratory examination would cost the patient at least twenty-five dollars, and the doctor informed me that such orders were not uncommon. One of the largest X-ray laboratories informs me that ninety-five per cent of the cases sent to them for X-ray have no tentative diagnosis on the order slip and that many conditions are found which were not suspected before the picture was taken; conditions which would easily have been discovered if a fair physical examination had been made.

The Health Office is also submerged with specimens which would not be necessary if proper examinations were made. For example:

Last year there were 275 specimens sent to the District of Columbia Health Office for Widal examinations, with 51 positives; sputa for tuberculosis, 2,367 specimens, 557 positive; diphtheria, 12,681 cultures, 1,700 positive; malarial smears 135, 2 positive; Wassermann examinations, 3,801 specimens, 895 positive.

I am not condemning the sending in of these specimens to the Health Office, as it costs the patients nothing, but we are all taxed for the extra work, and when private laboratories perform the services the cost amounts to quite a good deal.

We can in a measure blame our medical colleges for the lax procedure in examining patients, because physical diagnosis, as a study, is classed as a minor branch and I have found it hard to have the students take the same interest in minor as they do in major subjects. When you call to mind that physical diagnosis is the very foundation of the practice of medicine, you can readily see that it should be classed far ahead of the study of the practice of medicine, which all students love. Furthermore, medical schools are turning out technicians rather than diagnosticians. Upon receipt of medical diplomas, recent graduates take internship in hospitals, specializing—some going to maternity hospitals, others to eye, ear and throat institutions, while others take surgery only in a general hospital. Few of them become thorough diagnosticians and necessarily rely upon the laboratory. The remedy lies in turning out more diagnosticians and fewer technicians. I would like to see it made a requirement that every graduate in medicine take a rotation service in a hospital or be required to practice general medicine at least three years before he takes up a specialty. The profession would then be on a more scientific basis and we would by long odds have better diagnosticians and the public would be saved greatly as to life and finances.

It is our fault that we are in a rut; it is our fault that we have been passed over by the specialist and laboratory man, for the modern layman will no longer submit to pulse-taking and prescription-writing, and, what is more to the point, they object to paying so many fees and will, therefore, go direct to the specialist or laboratory. I, for one, do not blame them, as it is mighty expensive to be sick now days, for, when a poor chap becomes ill, the ball is started rolling and he is shunted from pillar to post until he feels the almshouse will be his end.

I do not envy the specialist, but all of the ideals I cherished when I entered the profession have not entirely been shattered and I would like to see the good old days that we read about return. I would like to see an era when the family physician would hold the place in the community which he once did,—an era when the internist or family physician would be the lead-horse he once was, and not the feeder to the specialist, as he is now.

With the many convenient schools giving seasonal courses, there is no excuse for the doctor of today being lax in his physical and clinical diagnosis, as a few weeks or even a few days each year will keep the most lax of us up-to-date.

I must impress upon the family doctor the necessity of being up and doing, the necessity of studying diseased conditions thoroughly, and the necessity of depending more upon himself, of making a tentative diagnosis of his cases before calling in the aid of a specialist or laboratory. By all means, use the laboratory as a check-up, or as an aid in unravelling complicated cases.

We must drill into ourselves and our students the fundamental principles of physical diagnosis and the necessity of making physical diagnosis a major branch second to none, for when we have those open sesames—history-taking, inspection, palpation, percussion and auscultation,—our opinion of a condition cannot and will not take second place.

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INCREASING THE VALUE TO THE PHYSICIAN OF BLOOD CHEMISTRY.*

By
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The chemical examination of the blood is one of the newer aids in the practice of medicine. Between the years 1840 and 1850, Claude Bernard showed that the normal blood contained sugar and noted that an increase of sugar in the blood caused glycosuria; Sir

*Read at meetings of the George Washington University Medical Society and the Fairfax County Medical Society, January 21, 1928, and February 18, 1928, respectively.

From the Clinical Laboratories of the Garfield Memorial and the Children's Hospitals, Washington, D. C.

A. B. Garrod during this period demonstrated that uric acid was present normally in the blood, but was increased in gout and certain forms of nephritis and not increased in rheumatism. From this time until 1912, very little advance was made in the quantitative estimation of the various substances in the blood concerned in disease and metabolism. American investigators have played an important part in the recent advances in our knowledge of the chemistry of the blood. The names of Folin, Van Slyke, Benedict and Bloor are bywords with the bio-chemist and they have been responsible in a large measure for making available to the physician and surgeon many of the diagnostic aids to be described and discussed tonight. It has only been within the past seven or eight years that these examinations have been used generally by the physicians of this city. It can be stated that the results of these examinations have been of inestimable value to many and have been the means of correctly diagnosing, prognosing and treating many diseases. The successful treatment of diabetes, nephritis, etc., can be partly ascribed to the employment of these methods.

By estimating the various constituents of the blood we can determine if they are present in normal amounts, increased above or reduced below the normal level. Variations from normal, as a result of disease, are due to either physical or metabolic changes. As an example of the former, we find a retention of nitrogenous waste products in nephritis, due to an increased impermeability of the kidney to these substances. In fevers and conditions resulting in tissue destruction, due to local death, as gangrene of an organ or part, abscesses, etc., we not infrequently find a retention of the above mentioned substances in the blood, as a result of the kidney being unable to excrete the increased nitrogenous products of metabolism as rapidly as they are formed. The normal values for the various blood constituents are determined on samples of blood drawn from individuals who have been in a fasting state for a period of from twelve to fourteen hours. For the majority of examinations, the whole blood is used, coagulation being prevented by the introduction of a chemical, such as potassium or lithium oxalate or for the estimation of sugar, sodium fluoride. Usually 10 c.c. of blood is withdrawn for the routine chemical examination and approximately 20 mg. of oxalate used. In the past, the results have often been expressed in percentage, but more recently they have been given in milligrams per 100 cubic centimeters of blood.

The following substances are usually estimated in the routine chemical examination of the blood, the amounts normally present being given:

	Mgms. per 100 c.c.
Non-protein nitrogen	25— 35
Uric acid	1— 4
Urea nitrogen	12— 18
Creatinine	0.7— 1.3
Sugar	80—120
Chlorides	450—500

The non-protein nitrogen includes such substances as uric acid, urea, ammonia, amino acids, creatine and creatinine. Normally, urea makes up approximately 50 per cent of the non-protein nitrogen, uric acid 2 per cent, ammonia 0.3 per cent and amino acids and "undetermined nitrogen" about 46 per cent.

Blood chemistry is perhaps most frequently used in connection with diseases of the kidney and pancreas. It is not infrequently that this examination furnishes the first definite evidence that the patient has nephritis or is a diabetic. Early impairment of renal function is often confirmed by a moderate retention of non-protein nitrogen being found. Of the various substances making up the non-protein nitrogen, the uric acid is the first to be held back in the blood stream as a result of kidney damage, urea next and lastly, creatinine. A knowledge of the rise and fall in the various substances named will give with other findings an excellent idea of the functional condition of the kidneys and will help in determining the prognosis. In acute nephritis it is not uncommon to find non-protein nitrogen values of 100 mg. or more. With such an increase and an elevation of urea nitrogen to 75 per cent of the total, a diagnosis of uremia should be seriously considered. Creatinine values of 3 or 4 mg. are of serious import and 5 or more ordinarily indicates that the disease will reach a fatal termination within a few months. Prostatic and other obstruction of the urinary tract is often the cause of definite nitrogen retention in the blood and the careful surgeon will do well to make use of these examinations in determining the operability of his patient and the procedure to be followed. The fact that albumin may be present in the urine in large amount does not neces-

sarily mean that the patient should be restricted to a low protein diet. Epstein has shown that the presence of large amounts of protein in the urine of a patient, often edematous, may show little nitrogen retention, but considerable increases in chlorides and cholesterol, with variation in the normal ratio between serum globulin and albumin. This would indicate that the condition is probably due to a metabolic change as well as renal impairment. A high protein and low fat content diet will often serve to improve matters.

An excess of sugar, even though none is found in the urine may be the first reason for suspecting that the patient may be a diabetic, or the fact that the sugar in the blood is found to be normal, even though it is present in the urine may be sufficient to lead one to consider changing a diagnosis from diabetes mellitus to renal glycosuria. Normally glucose "spills over" into the urine when the amount of sugar in the blood reaches an amount in excess of from 160 to 180 mg. per 100 c.c. The fact that diabetics often have high thresholds and may not show sugar in the urine until amounts as high as 250 to 300 mg. or more are reached, makes the value of the blood sugar determination self-evident. Its usefulness in the treatment of diabetes will be discussed by another; however, I would mention its value in determining whether or not the comatose patient with sugar in the urine is suffering from diabetic coma or brain injury or to learn if the known diabetic, who has been on insulin therapy, and is found unconscious, is a candidate for insulin or glucose. The estimation of the blood sugar, and if desirable, the determination of the carbon dioxide combining power of the blood, to learn the presence or absence of acidosis, will decide these questions definitely. It is of importance to know that acidosis is not always due to the faulty oxidation of fatty acids, but may be due to the retention of other acids. Accordingly, the fact that acetone and diacetic acid are not found in the urine, does not preclude a diagnosis of acidosis and it is upon the examination of the blood that we place our chief reliance in this condition. Of the various examinations made to determine the presence or absence of acidosis or alkalosis, and the degree of same, the determination of carbon dioxide combining power is probably the most satisfactory.

In intestinal obstruction it has been found that the non-protein nitrogen is elevated and the chlorides diminished in amount, if the obstruction has been present for any length of time. By the intravenous administration of normal or hypertonic solutions of sodium chloride, many of the toxic symptoms will disappear and the patient's ability to withstand an operation and recover is greatly increased. The fact that similar findings are often obtained in pneumonia should suggest the value of the administration of sodium chloride in this disease, where specific therapy has had little effect.

In rickets the estimation of the inorganic phosphorus and calcium are of value in confirming or making a diagnosis. The inorganic phosphorus will usually be found considerably below normal and the calcium may or may not be subnormal. If the product of the amounts of these substances be below 30, evidence of rickets will almost certainly be found upon careful examination. To know the amount of calcium in the blood of the patient with infantile or surgical tetany will enable the physician to effectively treat the condition by the administration of calcium intravenously or orally or by the use of Collop's parathyroid hormone. To be able to maintain the calcium at normal and to prevent its falling to the convulsive level makes this blood examination almost a necessity.

The recent tests for the quantitative estimation of the amount of bilirubin or bile pigment in the various types of jaundice have been of inestimable value to the physician and surgeon. By means of the icterus index and the Van den Bergh test, hyperbilirubinemia can be determined before it is evident clinically. The quantitative Van den Bergh enables one to estimate the amount of bilirubin in the patient's serum. Whether or not the jaundice is hemolytic or obstructive or both can be determined by the Van den Bergh test.

While the toxemias of pregnancy are still quite obscure in so far as their causation is concerned, much of our knowledge has been obtained as a result of the chemical examination of the blood. Many of our findings have been of value in a negative way. Pernicious vomiting usually shows evidence of acidosis, with little or no other blood changes. Liver damage may be made apparent by the Van den Bergh or icterus index. Considering the albuminuria and the number of casts found in the urine of the eclamptic, it is rather sur-

prising that a marked retention of nitrogen is not found in this condition and as a result it can be stated that eclampsia is not true uremia. A retention of chlorides and a moderate elevation of uric acid is usually found. Calcium is not disturbed sufficiently to lead us to believe that this element is greatly concerned in the tetanic spasms. The various tests used in determining liver injury not infrequently show some damage there.

In closing, I would like to give several practical suggestions. A routine examination of a patient does not necessarily warrant a complete blood chemistry. If the non-protein nitrogen is normal or nearly so, little additional information is secured by learning the amount of uric acid, urea nitrogen and creatinine, which will usually be normal. In such case, a request for the estimation of the non-protein nitrogen, chlorides and sugar, will usually give the necessary information needed and the patient will be spared unnecessary expense and the laboratory saved labor which is not essential. If the non-protein nitrogen is found to be increased above normal, the bio-chemist may be requested to make a complete chemical examination. The physician should be informed by the laboratory of the normals for the various substances estimated, as these vary according to the method used in different procedures; for instance, 90 to 120 mg. is considered normal for glucose by the method of Folin and Wu; for Benedict's, 70 to 100, etc. There is no reason why the physician, who has sufficient time and a proper appreciation of the difficulties and principles involved, should not undertake the more simple blood chemical examinations. His work should be well controlled by running simultaneous tests on solutions of known content.

Blood chemistry should not cause one to slight physical and other essential examinations. It should be considered as a valuable aid and not a substitute for a thorough examination.

Considering the fact that the subject of blood chemistry is but in its infancy, we can appreciate that we are at the beginning of things. Many mysteries are to be solved and numbers of diseases are to be controlled by methods yet to be evolved.

1801 *I Street, N. W.*

THE PRESENT DAY CONCEPTION OF A CERTAIN COMMON COLONIC CONDITION.*

By W. RANDOLPH GRAHAM, M. D., Richmond, Va.

Medicine, in its evolution, having passed through the periods of anatomy, pathology and chemistry, has arrived at the period of physiology. We are living in the functional age. No longer is the clinician content to know that an organ presents certain pathology. Of more concern to both him and the patient is the extent to which normal function has been interfered with. Nor should we overlook the fact that disordered function may exist without demonstrable pathology. It is to the subject of colonic dysfunction that I wish to direct your attention for a few minutes.

However, for the sake of orientation, let's consider Brown's conception of colitis. He classifies colonic pathology as either catarrhal or ulcerative. The catarrhal type is subdivided into—A, acute, and—B, chronic. He states that acute catarrhal colitis is probably always associated with gastric, as well as intestinal symptoms,—in other words, acute gastro-enteritis. His chronic forms include (1) the abuse of certain drugs, particularly laxatives; (2) probably the largest group, that due to elimentary irritants; (3) hypothyroidism; (4) following various exogenous infections, notably typhoid and influenza; (5) the result of harbored intestinal parasites; (6) gastrogenous, this type being nearly always associated with achylia gastrica; (7) that due to pancreatic disturbances, functional or organic; in this group he includes sprue; (8) post-operative, particularly following gastro-enterostomy: and last, but by no means least, a ninth sub-division, mucous colitis. The ulcerative forms are also classified from an etiological standpoint, and are enumerated as follows: (A) those due to endogenous toxins, as seen in nephritis, uremia and pellagra; under this heading is also placed the exogenous toxins group, found in arsenic and mercury poisoning; (B) the dysenteric forms, bacillary or amebic; (C) malignancy; (D) those due to tuberculosis; and (E) the non-specific forms as described by Bargen and others.

In 1925, Emery opened up a new field for speculation when he presented three gastro-intestinal cases at the Medical Clinic of the Peter

*Read before the Southside Virginia Medical Society, at Petersburg, Va., December, 1927.

Bent Brigham Hospital. The first, an Irish woman of 40, entered the hospital complaining of diarrhoea, abdominal cramps, and loss of weight. The patient had been sick for about two years. The stools were always greenish and slimy. During the past eight months she had vomited colorless mucoid material. Two months prior to entry she had been put on a bland diet with rest in bed, and her diarrhoea ceased, although the cramps continued.

The abdominal distress consisted most frequently of general abdominal cramps, usually more severe below the umbilicus. In addition, she frequently had fullness in the epigastrium, and a sensation of being distended with gas. The symptoms were made worse by eating. Soda gave little or no relief. The patient had been taking castor oil every day for a year.

Physical examination was essentially negative, except for the abdomen, which revealed generalized tenderness, more on the right side.

Gastric analysis showed a total absence of free hydrochloric acid.

All stool examinations showed them to be mushy or watery, and containing much mucus.

X-ray examination of the stomach was negative. A barium enema revealed a smooth colon, free of haustrations, typical of a so-called chronic colitis.

The second case was a man, 50 years of age, who had always been well up to three years previously, at which time he began to be troubled with indigestion. This consisted of a sensation of fullness or weight in the epigastrium, coming on around 10 A. M. or 4 to 5 P. M. Soda and eating usually gave relief, but not invariably. He had vomited on two occasions with some relief. In addition to the above, he was troubled a great deal with a sensation of gas and distention, and had considerable abdominal rumbling and gurgling. At times he would have cramp-like pains below the umbilicus. He gave a history of drinking considerably, and on occasions would take enough to become intoxicated.

Physical examination was essentially negative except for a palpable liver edge 4 c.m. below the costal margin.

Gastric analysis showed a free hydrochloric acid of 105, and a total acidity 135.

A barium enema revealed an extremely irritable colon, and it was impossible to get the barium beyond the rectum, as the patient was unable to retain it, owing to the marked contractions.

Stools were softer than normal, and visible mucus was present in all.

I would like to call attention to the fact that practically all this patient's symptoms were referable to the upper gastro-intestinal tract, particularly the stomach. He had a symptom complex closely resembling that seen in peptic ulcer, except for the fact that soda and eating did not always give relief.

The third case was a man, 39 years of age, whose complaint was abdominal pain, eructation of gas and loss of energy.

This patient had had gastro-intestinal symptoms for twenty years. Three years previous to this time he had had severe cramp-like pains around the umbilicus, lasting five or six days. The diagnosis of chronic appendicitis and gall-bladder disease resulted in an operation, but these organs were found to be normal. The cramps persisted after operation, and the patient began to complain of frequent eructations of gas. He started to lose weight, feel tired, and went to California, where he was put on a raw fruit and vegetable diet, under which his symptoms became worse. He had vomited at times when his symptoms had been most severe.

His discomfort occurred at any time in the twenty-four hours, but the distention was very likely to come on 15 to 20 minutes after eating. Partial relief was obtained with belching and with soda, after belching had occurred.

His bowels moved once or twice daily, but he had not noticed their consistency.

Upon physical examination, the abdomen was soft, and showed a scar in the right lower quadrant. The cecum, descending colon and sigmoid were easily palpable.

Gastric analysis gave a free hydrochloric acid of 40, with a total acidity of 54.

X-ray revealed no pathology.

The patient's stools showed an increased amount of mucus, and the only one obtained on an ordinary diet was softer than normal.

In the first two, colonic symptoms are sufficiently outstanding to direct attention to the lower intestinal tract. According to Brown, the first case would be classified as gastrogenous, associated with achylia gastrica. The second, as one of the group due to alimentary irritants, and in this particular case, alcohol. In

the hands of others the first one is quite commonly diagnosed mucous colitis; the second acute or chronic gastritis, and the third is given one of several different diagnoses, such as gastric neurosis, chronic indigestion, intestinal indigestion or even neurasthenia.

Upon analysis of the clinical findings, symptomatology and laboratory findings, we see that all three were troubled with a sensation of distention associated with a sensation of fulness in the epigastrium, interpreted by the patient as due to gas. All of them belched a great deal, with some relief. All had rumbling and gurgling in the lower abdomen. Soda gave relief only after belching. All three patients had been occasionally bothered with nausea and vomiting. The stools of all three were softer than normal. Mucus was present in the stools of all cases. Barium enemas gave the same findings in each case, although varying in degree. It was the stomach alone that presented any marked contrast in findings.

Emery assumes the position, and I think his stand well taken, that if the symptomatology of the first two cases was colonic in origin, why not that of the third also? He thinks the local colonic condition is one of degree alone, and on this hypothesis he has elaborated his doctrine of disordered function of the colon.

He likes to think of the colonic mechanism as having a threshold value at which it will respond to a given stimulus. Lowering the threshold will require a smaller and raising a larger, stimulus to activate this mechanism.

To quote Emery: "The colon consists of a tube made up of smooth muscle and a complex system of nerves. The nerves are for the most part of the autonomic system and go to make up Auerbach's and the myenteric plexuses. In addition, the central nervous system plays some role, as is evidenced by the well-known fact that mental excitement may produce a diarrhoea. Now this colonic mechanism always has a certain stimulus acting upon it in the form of the intestinal contents. Under normal conditions the stimulus to activity is such that the mechanism works as it should. Under these conditions we know by experience we can throw the system out of order in one of two ways. Returning to the idea of a threshold value, we can leave this unchanged and increase the stimulus sufficiently to break through. This may be done by the excessive use of cathartics, excessive use of alcohol, or the continued use of unduly irritating food. A single application of the increased stimulus by these means results in temporary derangement, with diarrhoea and cramps, which subside as the stimulus subsides. If continued over a long period of time a chronic condition is set up which takes a longer time to recover from.

"On the other hand, the stimulus may be kept constant and the threshold lowered. This would appear to be the situation in the cases before mentioned, when, through anxiety or mental excitement, an individual is seized with diarrhoea and cramps. And this seems to be the situation in the cases with an unstable nervous system. This is what we have in the so-called neurasthenic or neurotic individual. These cases have a low threshold value normally. A stimulus that can be tolerated in the average case will be too much for the nervous individual."

The foregoing is only a theory and remains such until sufficient experiment and observation have accrued to make it appear indisputably true.

Hurst studied the physiology of intestinal movements and of defecation by means of X-ray examination following barium meals and enemata. He found that more time is required for the passage through the two feet of colon between the cecum and splenic flexure, than for the passage through the twenty-two and a half feet of the small intestine. This latter observation would seem to indicate the presence of a different sort of propulsive mechanism in the colon from that in the small intestine.

A comparison of the two types of peristalsis found in the intestinal tract is very interesting as well as pertinent. For example, food entering the duodenum is carried steadily onward by a series of so-called peristaltic rushes. This type of movement occurs in sequential order, and with sufficient speed to transmit the contents from duodenum to cecum in approximately four hours. Thus, we may say in general that once food enters the small intestine this organ does not rest until the invading material has reached the terminal ileum. Not so with the colon. In this location activity is neither continuous nor sustained, the contents being pushed along *en mass*, giving rise to the term mass persistalsis.

For a long time students of colonic function were at a loss to explain just how this movement took place, for whenever the shadow of the colon was examined after an opaque meal it was found to be completely immobile. As a result of painstaking watchfulness, however, the problem was solved.

Hurst and others have repeatedly observed mass peristalsis in man, and it is to them that we are indebted for the discovery of several very interesting facts. First, the taking of food into the stomach has a marked effect upon the passage of content from the terminal ileum into the cecum. Second, the ingestion of food is apparently a vital factor in setting off colonic activity. And, third, there must necessarily be some connecting medium by means of which the stomach and duodenum transmit their call to action to the lower intestine and colon. Most investigators believe these latter phenomena are neurogenic in function, and are commonly known as the gastro-ileal and gastro-colic reflexes.

Defecation occurs in most healthy adults once in twenty-four hours. Normally, this act is accomplished after a sufficient quantity of material has accumulated in the lower colon and rectum to activate the complicated nervous mechanism known as the defecation reflex. In this connection there are two interesting observations. First, under normal healthy conditions, considerable movement of colonic content takes place without subjective sensations; and, second, evacuation usually occurs soon after the ingestion of food.

We see that under normal conditions the colon becomes active coincident with the ingestion of food. Therefore, it is perfectly conceivable that in those cases in which an irritable colon (lowered threshold) already exists, the taking of food into the stomach might produce the classical symptoms of rumbling and gurgling, cramp-like pains or even diarrhoea. Furthermore, it is not at all surprising that persons with these symptoms should incriminate their stomachs because of the fact their distress occurs coincident with or soon after the taking of food.

During 1926 Graves and Graves published a paper along the same lines as Emery's, entitled "Irritable Colon." Although Emery had said nothing about constipation, these authors state that constipation is generally the rule though there may be a history of diarrhoea or alternate constipation and diarrhoea.

In my own personal experience this symptom is frequently met with in patients with classical colonic symptoms, and they are almost invariably relieved by a colonic regime directed towards reducing intestinal irritation to a minimum.

The symptoms of disordered or irritable colon are diverse. They may occur at any place in the abdomen and may vary from the mildest type of distress to the most severe cramps. Patients commonly complain of distention, for which they frequently loosen their clothes, seeking relief. There is nearly always a history of gas and belching obtainable.

In a typical case, many or all of the following symptoms are complained of:

1. Gas, usually in the lower abdomen, associated with rumbling and gurgling noises and followed by the passage of flatus.
2. Constipation, or alternating constipation and diarrhoea.
3. Abdominal pain or cramps, usually in the lower abdomen.
4. Anorexia and the consequent loss of weight.
5. Nausea and vomiting, especially in neurotic cases.
6. Diarrhoea, or at least two or three bowel movements daily, which are invariably softer than normal, and usually mushy or watery.
7. Occasionally a patient will be met with who has observed that his symptoms will be aggravated by certain foods, particularly those giving a rough residue, such as cabbage, apples, pears, etc.
8. Disturbed sleep is commonly complained of.

The treatment of these cases is quite simple and almost invariably successful if carried out intelligently and continued over a sufficiently long period of time.

It is essentially as follows:

1. Stimulating or irritating articles of diet must not be allowed, such as alcohol, pepper, spices, etc.
2. Rest in bed should be advised, for these people are usually nervous, high-strung, ptotic and underweight.
3. Diet, and this is of utmost importance. In the beginning the food should be almost entirely residue free. Raw fruit, coarse vegetables, fried and greasy foods are not allowed. As the patient improves, cellulose containing articles are cautiously added until the patient is again on a normal diet.

4. Tincture of belladonna, or belladonna and tincture of hyoscyamus, of each 5 to 10 drops 3 or 4 times a day, is administered with a view to aiding in the relaxation of spasm.

5. Heat, in the form of a hot water bottle or an electric pad, should be applied to the abdomen two or three times daily, or whenever cramps occur.

6. In the event the patient becomes worried because his bowels do not move daily, mineral oil should be prescribed, 1, 2 or 3 times daily to suit the needs of the individual case. In case the bowels should still remain sluggish, an enema should be given consisting of not over 500 c.c. of luke warm water, to which a level teaspoonful of sodium chloride has been added.

It is my belief that colonic hyper-excitability is a functional, or rather dysfunctional reality, and that it produces, in susceptible individuals, a group of symptoms which differ from those encountered in colitis only in degree. Unfortunately, because of the accompanying gas, belching, pain, nausea, vomiting and tenderness, persons who present this syndrome are frequently diagnosed peptic ulcer, gastritis, gastric neurosis, gall-bladder disease, appendicitis, pelvic inflammatory disease or neurasthenia.

Medical Arts Building.

USE OF LIPIODOL IN DIAGNOSIS OF SINUS DISEASE.*

By G. B. TRIBLE, M. D., F. A. C. S., Washington, D. C.

A consideration of the diseases involving the nasal accessory sinuses, their varying and constantly changing clinical pictures, the radical differences of opinion that exist among equally well-informed and skillful surgeons in these specialties, and the obstinacy shown in resisting treatment, has made it clear that in the chronic cases there must be an underlying factor or factors, which make for chronicity and tend to defeat in many cases the most painstaking operations or medicinal treatment.

With a view of clearing up this problem, or at least throwing some light upon it, for more than the past five years a careful study has been made, not only of the radiographs prior to operations, and the cultures from the contents of the sinuses upon operation, but a complete histological examination of the mucosa and bone has been carried out so far as possible. Owing to many unforeseen difficulties, the publication of this work was preceded by the publication of McMahon, whose published studies, however, embraced only the ethmoid and sphenoid, though at present he is working in a similar fashion upon the mastoid. In fact, the whole trend in recent sinus work has been to stress the importance of the bone factors over the previous ideas of simple mucous membrane infection and not to limit the conception of an osteomyelitis to the fulminating forms.

In a previous article,[1] the development and structure of the air cell bearing bones was taken up; briefly, there is a deposit of osseous tissue in the mesenchyme; the embryonic connective tissue lying between the brain and the skin, and the destruction, resorption and deposit of bone cells, which goes on simultaneously, and which causes the formation of the air cells, and which is the case of the maxillary antrum, goes on until death. Further, these bones are essentially flat bones and, while the development and structure of all bones is roughly the same, each consisting of a dense cortex surrounded by a vascular membrane—the periosteum—and having on the inside a more spongy, diploetic layer, in the long bones there is an actual channel filled with marrow, which blends into the cancellous tissue at the joints. Pathological bone changes will differ in the two types of bone and while the mental picture of an osteomyelitis is that of a long bone, such as the tibia, or that of an extensive necrosis, such as is sometimes found in the frontal, those lesions fortunately are not common.

In reviewing the reports of the microscopic examinations in the series of cases from which the tissue has been taken, it is found that in practically all the cases the picture is that of subacute and chronic plastic processes resulting from long standing infection, and it might be mentioned that the primary bacterial agent is more or less a matter of indifference, except in the antrum cases where rapid destruction follows the liberation of facultative anaerobes from extractions of infected teeth; here occasionally a completely necrotic mucous membrane is found. In the other cases, inflammatory changes in mucosa are demonstrated by marked round cell infiltration, endothelial proliferation, engorgement of the

*Read before the Medical Society of the District of Columbia, February, 1928.

blood vessels, polymorphonuclear immigration, formation of new loose connective tissue producing a syncytium, and a marked tendency to polypoid formation. The periosteum is almost invariably thickened, there is usually marked destruction of bone and in a few cases there is some evidence of new bone formation. Irregularity of the lamellae, especially around the Haversian canals, areas of decalcification, and numbers of dead bone cells are seen.

The radiographic changes in bone involvement are not so characteristic in flat bones as in the long; beginning changes are not shown so readily while persistent shadows due to the alteration in the structure or deposit of calcium salts in the periosteum may continue after symptoms have subsided or after successful operative procedures. Fluid secretions, thickened membrane or polypi do not cause such deep shadows as alterations in the bony structure. McMahon's conclusions[2] were that five marked changes were found in the bone, based on his work in the sphenoid and ethmoid before mentioned: namely, rarefaction, necrosis, osteomalacia, fibrosis and hyperostosis and he felt that the constant changes in the walls of the vessels, diminishing the supply of blood to the part, caused the production of connective tissue. As might be expected, the changes in the ethmoid and middle turbinate partook of the same characteristics.

The practical question that confronts not only the specialists, but the general man as well, or members of the other specialties, is whether this or that case should be recommended for operation and if there be any method by which light can be thrown upon the probable contents of a sinus, prior to operation. The mere presence of pus or other fluids in the sinus does not of necessity demand operation; in fact, the acutely infected cases, other than those in the antrum from dental origin, do very well frequently without operative interference. We do have a method by which the free space in the sinus can be estimated and, since pathological findings have shown plastic changes in the walls, a differentiation can be made from the healed sinuses which still show radiographic shadows, but which have a perfectly restored lining membrane, and on the other hand, cases which may not even show pus on washing, but which may show, nevertheless, on operation a productive formation of granulations or polypi; the so-called plastic type. By radiographs alone large polypi or cysts can be demonstrated, but isolated areas of encroachment upon the normal free space, or uniform thickening of the mucosa can not be so well demonstrated.

By the injection or the instillation of non-toxic roentgen-opaque solutions, a fair estimate can be made of the contents of a sinus; and this is of particular value in antrum work, especially in the cases of dental origin or with dental fistulas. There are several which may be utilized, but the best results seem to be obtained from the use of lipiodol. The silver salts are frequently followed by a headache, and might produce an argyria.

In this preliminary report, only the work on the antrum will be taken up and, in this connection, these cases were injected with a straight needle following the aspiration and irrigation with weak saline, and drying of the cavity to avoid the presence of retained secretions. In the cases of dental fistulas, injections were made through fistulous tracts. Proetz does not favor the injection method, feeling that it is possible to inject a polyp or cyst, for instance; while if the solution were instilled through a natural opening it will float over these elevations and, besides, localized areas of the membrane may be injected which would give a misconception. No such difficulty has been encountered and further, since the antrum is the most frequently infected of the sinuses and the one most often in need of surgical attention, it is best to inject it alone.

Use of a canula and instilling through the ostium has not worked out successfully. The routine examination carried out is, first the usual inspection, shrinking the mucosa, then trans-illumination including teeth, the X-ray examination and, if cloudiness of the antrum on X-ray examination, or pus on inspection, coming probably from the antrum, the next step is aspiration of the antrum, and while the needle is in situ, injection with lipiodol, retaking the radiograph, using both anterior-posterior and lateral views.

Representative cases only are presented here. The first illustration shows complete filling out of the antrum by the roentgen-opaque solution. This would preclude the existence of any long continued disease; shadows, if such were shown on trans-illumination or X-ray, would be the result of healed processes; and

pain or discomfort if complained of, in such a case, would likely be due to other causes than antrum disease. (Figure 1).

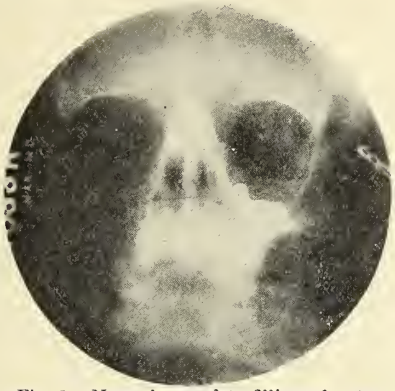

Fig. 1.—Normal, complete filling of antrum with lipiodol.

Case: Mrs. E. K. There is close approximation between the lipiodol and the sinus border on the outer wall, but in the ethmoid angle, filling defects. This was an acute exacerbation in a chronic case and on operation showed the pathology indicated by the radiograph after injection. (Figures 2 and 3).

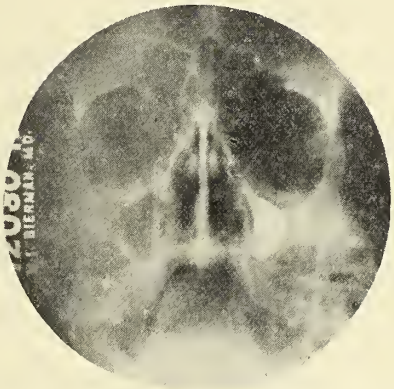

Fig. 2.—Shows left maxillary sinus filled with lipiodol. Note close approximation between lipiodol and sinus wall.
This case is comparatively recent and would not clear up. On subsequent operation showed considerable involvement.

Fig. 3.—Lateral view.

Case: H. A. Chronic sinus infection with an acute exacerbation. The large filling defect in the outer wall was shown on operation to be due to polypoid degeneration of the mucosa. (Figures 4 and 5).

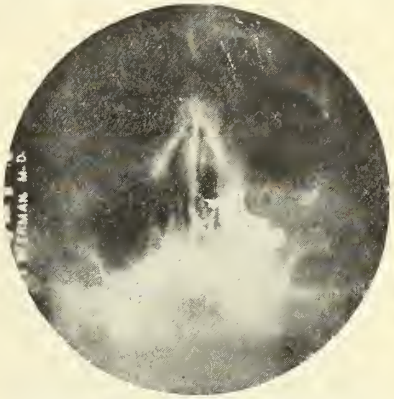

Fig. 4.—Left maxillary sinus injected with lipiodol. There are irregular, semi-circular defects in the lateral side of the lipiodol shadow. These are presumably due to encroachment of granulations upon the sinus area. Operation confirmed the findings of this picture.

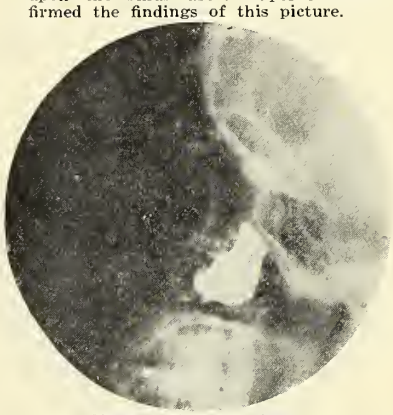

Fig. 5.—Lateral view.

Case: H. W. W. Chronic antrum infection extending over a number of years. Seen in consultation and external operation advised. (Figure 6).

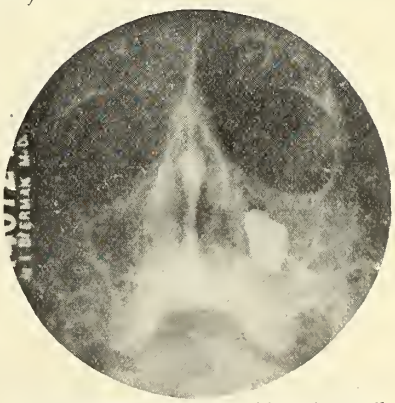

Fig. 6.—Shows lipiodol within left maxillary sinus. Note distance between lateral sinus wall and lipiodol shadow. This indicates thickened sinus membrane.

Case: C. Type of chronic infection in a well developed antrum, with lipiodol extending below line of the palatal arch. Probably presents alveolar pneumatization. This patient had been advised all the way from vaccines alone to radical operation. Such a case would probably not clear up without extensive surgery. Developed this in the dry climate of Nevada. (Figures 7 and 8).

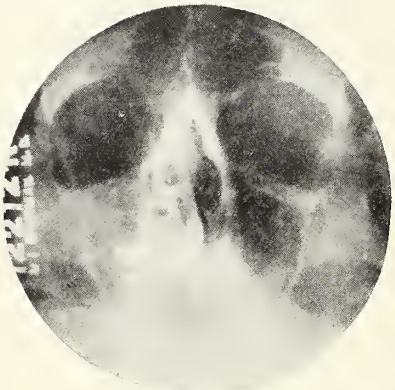

Fig. 7.—Showing antrum nearly completely filled with granulations or other inflammatory products.

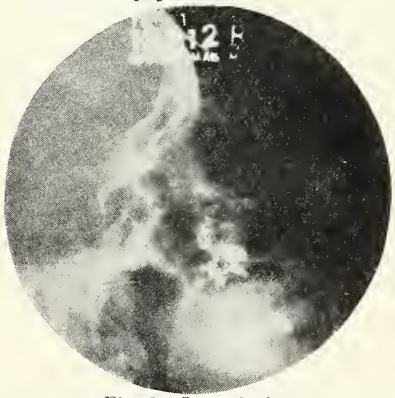

Fig. 8.—Lateral view.

The type of operative interference can be selected with a view to meeting the pathology.

Fig. 9.—Unusual appearance presented by probable cyst. Collection of lipiodol in the upper part of the antrum cavity assuming a dome effect. No operative interference.

It would be useless to use the mere window resection intranasally, if the ethmoidal angle and the upper outer border were filled with granulations or polypi, or if a dentigerous cyst be present. Malignancies are a class apart, and have not been so far encountered. (Figure 9).

Surgical frontals are relatively rare, but are of great value in such cases and in cases of differential diagnosis where a cloudy frontal is shown on radiograph, with evidence of intra-cranial complications, and the point must be established that the cloudy frontal is not an active infection. Instilling lipiodol, or some similar roentgen-opaque substance, and getting a radiograph and finding the solution filling out completely to the bony margins, makes it evident that very little stress need be laid on that sinus as a focus of infection or as a factor in producing symptomatology.

I wish to thank Dr. Bierman for his cooperation with the radiographic and photographic part. Without his indefatigable help this work could not have been carried on.

BIBLIOGRAPHY.

1. Sinusitis from the Viewpoint of an Osteomyelitis.
2. Archives of Otolaryngology, Volume V.

1801 *Eye Street, Northwest.*

SAFE, EFFICIENT ETHER ANESTHESIA.

By J. B. H. WARING, M. D., Blanchester, Ohio.

In the British Empire, we are told that deaths under ether anesthesia are reported almost as frequently as under chloroform. This was a distinct surprise to us, as we imagined that, with their excellent training and conservatism in all things medical, our English confreres would have safe anesthesia, if nothing else.

Our impression has been that, of the commonly used inhalation anesthetics, nitrous oxide headed the list as most lethal, followed by chloroform, with ether as a far distant third. In fact, our idea had been that, in competent hands, ether was distinctly a "safe" anesthetic.

Based on a questionnaire sent to 1,000 Fellows of the American College of Surgeons, Dr. Edwin MacD. Stanton received replies from 64 per cent; and concluded that the other 36 per cent were asleep without any anesthetic. Of the 640 surgeons scattered over the United States, who were good enough to reply to Dr. Stanton, 85 per cent employ ether as their standard anesthetic. From this, we may safely conclude that ether is the anesthet-

ic employed by the great majority of American physicians today. Despite the claims advanced for nitrous oxide, ethylene, ethyl chloride; and other newer anesthetics, ether then continues to be the anesthetic of choice.

Properly administered, we believe ether to be distinctly a "safe" anesthetic, if there be such a thing; but in the vast majority of unhappy occurrences with ether, it will be found the anesthetist was the "unsafe" factor. This is largely the fault of the profession; or, more perhaps, the fault of conditions under which we operate. Competent anesthetists may be born and not made, but we should by all means prefer the properly "made" anethetist. In the larger cities and larger hospitals, where anesthesia can be, and is practiced as a distinct specialty, physicians of long training and experience as a rule administer all anesthetics, and the anesthesia problem offers little difficulty. Likewise, accurate statistics on our larger hospitals and clinics would doubtless show minimum anesthetic mishaps and fatalities; but under present-day conditions almost any licensed physician, from hospital intern on down or up (depending on the viewpoint), is presumed to be by law vested with competency to administer anesthetics for any and almost all surgical operations where general anesthesia is indicated or employed.

A good many interns, through observation and practice under the watchful eye of competent anesthetists, learn to give fairly good and safe anesthetics; but thousands of anesthetics are given today by physicians who never saw the inside of a hospital insofar as actual internship is concerned. In the smaller communities, it is customary for the family physician to administer the anesthetic, while the small town hospital surgeon operates either in hospital or in the private home. In the larger towns many young physicians just commencing practice give anesthetics for better established practitioners who are beginning to dabble in surgery. In some states the cultists are beginning to be allowed by law to administer anesthetics, apparently on the lay legislator's presumption that anesthetic administration is a decidedly minor affair. Under conditions as they exist as a whole, it must be considered that anesthetic fatalities are comparatively infrequent, simply because the almost universally employed ether is a "safe" anesthetic.

It has been our good fortune to have obtained a fairly good training in anesthetic administration during hospital days, and since then to have given a fairly good number of general anesthetics. Likewise, we happened to be on the receiving end of two ether administrations, and our recollection of those events is quite fulsome. In the first affray, a cone was made of newspaper and towel with a wad of cotton in the apex; about half a can of ether was poured on, and, with this clamped over nose and mouth, we were quickly, if not pleasantly, suffocated or asphyxiated into a state of surgical anesthesia. The going was rough, and vividly remembered. The second anesthesia was in a hospital where we drifted off into slumber easily and smoothly under a properly given drop method ether; and the difference between the two methods was very marked from the patient's viewpoint.

In later days, whenever we had a general anesthetic to give, we always remembered the "nice" anesthetic received the second time, and always have tried to do unto others as nicely as we were done unto that second time. Experience has shown that if we can put ourselves in the patient's place and administer the anesthetic in accordance, the patient will have a fairly comfortable time of it; and the anesthetist will likewise fare not so badly.

We claim no proficiency with nitrous oxide, with ethylene, ethyl chloride, or the various sequences going through more or less an evaluation process these days.

We do believe, however, that ether by the so-called "drop method" can be given safely and efficiently, and with a minimum of discomfort to the patient; likewise, with little worry on the part of the operator as to how the patient is "doing" from an anesthetic standpoint at any stage of operation. With the anesthesia to be described, all the surgeon has to bother about is his surgical knitting.

Without the utmost concentration and great fatigue on the part of the anesthetist, it is almost impossible to give ether by a real drop method for an hour or two, when the dropping is by hand. What starts out as a drop method usually ends up with an intermittent pouring on, and cessation of pouring on, the anesthetist resting his hand and arm in between droppings. This means an uneven, jerky anesthesia and considerable wastage of ether. One

minute the patient is getting an over-concentrated ether vapor, and the next a weak ether vapor.

As the first stage in improving our anesthesia, we developed a little piece of apparatus, for want of a better name termed an "anesthesia arm." This little device was made in two models, one of which clamped on the end of the operating table, bedside table, chair or bed. It held suspended in dropping position over patient's face the ordinary ether can, which was fitted with a drop-regulating cork device, so that, by turning a set screw, ether could be dropped at any desired rate,—increased or diminished at will. The apparatus was regulatory to any position, and with it anesthetic administration could be instantly discontinued, or resumed, at the same or a different drop rate, at will of the anesthetist. The physical labor of holding our ether can in dropping position for say a half hour to two hours or more, was thus done away with. Yet the apparatus was simplicity itself, and could quickly be dismounted or reassembled, besides being light in weight and portable in the surgeon's instrument bag. The floor-stand model was similar in all respects to the operating table model, except its support was on a weighted base and rod; instead of being clamped to table.

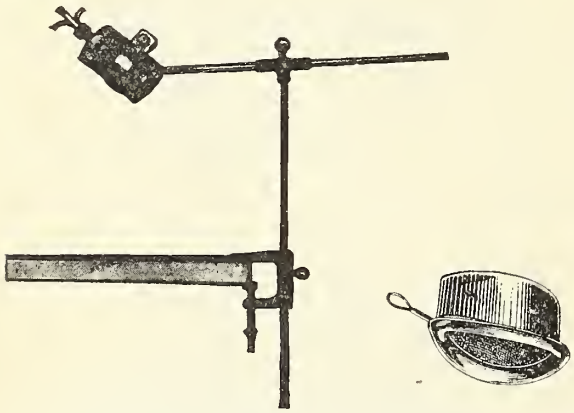

Fig. 1.—Cut showing "anesthesia arm" attached to end of operating table, complete with ether can in holder and automatic dropper stopper in mouth of can, ready for use. At right, modified Yankauer chloroform cone assembled with drop method ether hood in position.

This little device was a wonder worker insofar as smoothness of anesthetic went. We could commence our anesthetic at a drop rate so slow the patient hardly noticed the ether vapor when dropped on a mask moistened with cologne, oil of orange, etc. Diluted with plenty of air, and gradually increased in drop rate as the patient's respiratory apparatus became more accustomed to the ether vapor, the great majority of adult patients reached a state of surgical anesthesia with rarely the slightest excitement stage or evidence of discomfort. The surgical anesthesia stage reached, our ether drop rate was then maintained just rapid enough to keep the patient under perfect surgical anesthesia throughout the operation proper. As a rule, by the time the surgeon commenced to suture a laparotomy incision, the anesthetic could be discontinued entirely, and the operation completed with the patient's color good, breathing regular and quiet, and with the heart action having been good throughout. Recovery from the anesthetic carried a minimum of post-anesthetic nausea and vomiting, and never a trace of post-operative pneumonia or other difficulty attributable to the anesthetic. Occasionally with young patients, considerable mucus and saliva accumulate in the throat under ether, but this is rapidly aspirated with a motor driven suction pump that is brought into play from time to time, as indicated. Not so often do we find a suction pump at hand in connection with a general anesthetic, but we do find plenty of tongue grasping forceps, breathing tubes, sponge forceps and the like on the anesthetist's table. A good suction pump should be part of the anesthetist's equipment for every general anesthetic.

Our next step in development of a good anesthesia was a study of the various cones and masks in use today. Most of them are hold-overs from a decade or two back, and all were more or less efficient, but often unhandy for the anesthetist, or heavy and uncomfortable on the patient's face. For drop method ether, the well-known Ferguson inhaler is unquestionably one of the most efficient in use, and on merit deserves a far wider usage than is seen today. This is essentially a wire framework inhaler, carrying a superimposed framework over which is placed a densely woven cloth hood that is drawn taut with drawstring, so that an aperture about as big in diameter as a quarter is left, through which ether is dropped on to the cone roof below. It is light and flexible for adjustment to different faces, and, with fresh gauze and cover for each case, is clean and sanitary. The two

chambered nature of this inhaler provides perfect ether vaporization; and conserves ether considerably. Our only objection to it was that it had to be freshly reassembled each time in use; also, the wire framework often seemed to push unduly on the patient's face or nose, and to us it was just a little clumsy to hold steadily over the patient's nose and mouth.

We had used many a time the well-known Yankauer chloroform mask, and were impressed with its almost invariably easy application to the features of various patients, as well as with its compactness and general reliability. The Yankauer mask, however, was designed for chloroform administration primarily, and, with its ordinary covering of several layers of gauze, admits so much air that, unless kept saturated with ether, it is difficult to keep many patients under a satisfactory degree of anesthesia—that is, without considerable ether waste. Many anesthetists endeavor to get around this difficulty by wrapping a dampened towel about the mask, leaving a small aperture on top for ether administration. This is always more or less slip-shod in appearance and efficiency, and, as a rule, requires constant attention to avoid disarrangement with the slightest movement of the patient's head. With a towel folded over the patient's eyes, presumably "to keep ether out of the eyes", and with the Yankauer mask buried in a draped damp towel on the patient's face, it is difficult to keep an accurate eye on the patient's color,—a very important essential with general anesthesia. Some anesthetists cover the Yankauer mask with a piece of discarded rubber surgical glove, with a central aperture in the rubber through which ether may be dropped directly on the gauze of mask. This shut down the excess air intake appreciably, but still ether vaporization facilities were not entirely satisfactory. Frequently the mask becomes so ether-saturated that it runs off the mask on the patient's face, or in his eyes. Hence, the time-honored application of vaseline or cold cream to the patient's cheeks, nose and lips, at commencement of anesthesia. As it is, however, a great many anesthetists struggle through with the disadvantages of the Yankauer mask, as ordinarily arranged, partly through apathy or sheer inertia; partly because the Yankauer seems the handiest of the many anesthesia masks available. Being widely used, it is also very inexpensive as compared with some more elaborate anesthesia masks.

In an effort to combine the advantages of the Yankauer and the Ferguson masks, or, rather, to obviate some disadvantages of the two, we devised several experimental masks. A metal cuff was made to fit snugly over the gauze-covered Yankauer mask, sliding down to the retaining spring, and wide enough so that its upper rim was about an inch higher than top of mask. Over this metal cuff, a sheet of rubber tissue was placed, with an aperture about ¾ inch in diameter in its center. The cuff covered rubber assembly was slipped over the mask, and, over all, the retaining spring was slipped in place. This gave us a rubber-covered two-chambered inhaler, which worked very satisfactorily. It was a simple step from this, however, to have an all-metal-covering hood made, which slips easily over the Yankauer mask and at once gives us the undoubted ether-vaporization efficiency of the Ferguson, with the ease of handling of the Yankauer.

In use, the improved mask is placed over the patient's nose and mouth in the ordinary manner. It is not necessary to grease the patient's face in the time-honored manner, as ether is vaporized before it can come in contact with the skin. Likewise, it is not necessary to cover patient's eyes, unless the patient so desires, as the ether will not come in contact with eyes, and many anesthetists seem to feel the patient goes under with less misgiving, if the eyes are left uncovered.

The metal hooded mask has an aperture in the top about ¾ inch in diameter and, before placing over patient's face, the gauze is well sprinkled with cologne or oil of orange. In position, the patient is instructed to breathe easily; and can see for himself or herself, as the case may be, that plenty of air is available, and then feel assured that sufficient air supply will be just as available, throughout the anesthesia. Shutting off the air supply, or a too concentrated ether vapor in the early stages of anesthesia, seems to cause more fright and resistance on part of patient than anything else.

The patient is now told the anesthetic will be given slowly, with plenty of air all the time, after which the "anesthesia arm" is ad-

justed so the dropper is over aperture in the mask. Ether is now started by a turn of the needle valve in dropper cork on ether can, and a very slow drop rate employed.

The ether drops in fluid form on the gauze covered wire-gauze dome of the Yankauer proper, and, vaporizing almost instantly, the heavier ether vapor drops through into the air space below, and is thus inhaled by the patient well mixed with air. We found that with this outfit the average major operation requires less than half the ether ordinarily used, with a far more perfect anesthesia. Induction is so smooth and easy that, in the great majority of adults, there is no appreciable excitement stage, and a stage of surgical anesthesia is reached and maintained throughout operation with a minimum of effort on part of anesthetist. Heart action and respiration suffer no appreciable interference from the anesthetic, and the patient's color remains practically perfect the entire time. When the patient is fairly well under, a small elastic band, slipped under back of neck and over top of cone, maintains it in place over nose and mouth, without constant attention by anesthetist. Patient's eyes and face remain uncovered throughout, and thus are under constant, easy observation by the anesthetist. Anesthesia may be maintained at a constant rate of drop ether for such period as desired, and then tapered off by a lysis-like diminution of the drop rate, or ceased abruptly at will of the anesthetist. Anesthetic administration may be stopped instantly at any stage, and as quickly resumed at the same drop rate, or at a different rate, as desired.

Patients as a rule come out almost as smoothly as they went under, very rarely require post-operative stimulation against any anesthetic depression effects, seem to have a minimum of nausea and retching, and very rarely have any evidence of post-operative respiratory irritation, or tendency to ether pneumonia.

Children go under the anesthetic almost as smoothly and easily as do adults, and, unless frightened immediately at commencement of the anesthetic, rarely disturb with struggling or resistance to the anesthetic.

Children fill up with mucus and saliva quite commonly under any form of ether anesthesia by inhalation—far more so than with adults, —but with either adults or children, any accumulation of mucus in the throat may be quickly removed with a saliva ejector hooked up by flexible rubber tubing to a suction pump, which should be an indispensable part of the equipment for anesthetic administration in this day and time.

Advantages of the outfit are so obvious, once it is seen in operation, that few up-to-date surgeons and anesthetists would be content to go along further with the ordinary "drop method" ether that is so commonly seen today even in well equipped hospitals and clinics.

Perfect anesthesia with half the anesthestic might well be sufficiently descriptive.

References.

1. Edwin MacD. Stanton: Compend of Medicine and Surgery. Vol. 5, No. 10, page 316.
2. J. B. H. Waring: A Simple Modification of the Yankauer Chloroform Mask. *Eye, Ear, Nose and Throat Monthly*. Chicago, March, 1927.

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Correspondence

Observations in Pellagra.

Norfolk, Va.,
August 1, 1928.

To the Editor:

In response to a request from Dr. Ennion G. Williams, State Health Commissioner, I am sending letter about "Some of my observations in pellagra."

In my experience pellagra occurred only in the white males and colored females—ages 2 years to 65 years. All females except one infant two years old, died. All males recovered, though several of them were sent to an asylum on account of their mental condition.

A two year "period of incubation" in half dozen instances of exposure seemed more than a coincidence.

The child two years of age was carried in its mother's arms, then a new born infant, to the house of a pellagra patient whom the mother nursed throughout her illness—thus exposing the child constantly.

This pellagra patient in turn lived next door to and had waited upon a pellagra patient who died of the disease just two years previously.

H. W. Phillips, M. D.

Owing to the incidence of a number of cases of pellagra in Virginia, during the past few

months, the State Health Commissioner issued a letter to Virginia doctors, asking them to write up their observations on the cases they treated and to send them to the MONTHLY for publication. Dr. Phillips' letter is the first response to this request. (*Editor*).

Rocky Mountain Spotted Fever.

Helena, Mont.,
July 19, 1928.

TO THE EDITOR:

It has occurred to me that you might be interested in the subject of the Rocky Mountain Spotted Fever which is rather prevalent in Montana. The clinical picture of the disease is well described in various text-books so I will not enter into that but will try to tell you about some of its other phases.

The Rocky Mountain Spotted Fever, or tick fever, is rather wide-spread over a number of states in the northwest, including Montana, Wyoming, Idaho, Washington, Oregon and even northern California, and a peculiarity is that the severity of the disease as evidenced by the death rate varies markedly in different sections. The most virulent type seems to be in the Bitter Root Valley of western Montana where the case fatality rate is about 85 per cent. Other sections of Montana have a rate of about 25 per cent, while in Idaho the mortality rate is about 5 per cent. So far as I know there has been no explanation of this extreme variation in virulence. The average yearly incidence of the disease in Montana during the past ten years has been thirty-one cases and nine deaths.

For the past several years the U. S. Public Health Service, in conjunction with the Montana State Board of Health, has been making very extensive studies of the disease, especially in the Bitter Root Valley where a well equipped laboratory has been established. The work here is in charge of Doctor R. R. Spencer, Surgeon of the Public Health Service, who by the way is a native of West Point, Virginia.

It has been definitely shown that spotted fever is transmitted by the ordinary wood tick and that the intermediate host is usually some of the rodent species, especially gophers, and efforts at control have been directed largely towards eradicating both ticks and gophers. A condition that makes the work very difficult is that the life cycle of the tick extends over a period of three years and that infected ticks may transfer the infection to succeeding generations. The laboratory has been successful in making a vaccine similar to typhoid vaccine from infected ticks and they are also working on the development of a parasite which will attack the ticks. The spotted fever season coincides with the tick season in this section which is from the latter part of March until the first of July and therefore the spotted fever season is about over for this year.

The following extracts are taken from Doctor Spencer's report to the U. S. Public Health Service:

RESULTS OF VACCINATION

"In the entire Bitter Root Valley, 2,707 people have been vaccinated during the past three years. Among a population of about 2,000 people in the infected area on the west side over 1,100 have been vaccinated. Seventeen cases and 14 deaths (82 per cent mortality) have occurred among individuals not vaccinated. During the same period ten cases and one death (10 per cent mortality) occurred among the vaccinated.

In Wyoming, where the mortality rate is about 25 per cent, three clinically mild cases with complete recovery occurred in vaccinated individuals.

In Idaho, with a mortality rate of about 5 per cent, one mild case has occurred among the vaccinated.

LABORATORY INVESTIGATIONS OF ROCKY MOUNTAIN SPOTTED FEVER

(a) Efforts extending over several years have failed to successfully cultivate the causative organism of Rocky Mountain Spotted Fever, but intensive study has demonstrated a definite functional progression of the virus in ticks which includes a dormant or latent stage. No comparable morphological changes in the rickettsia associated with the disease has been demonstrated. This work will be the subject matter of a forthcoming paper.

(b) Rocky Mountain Spotted Fever infection from ticks has been shown to penetrate the unbroken skin of animals and produce the disease. Infection in the blood of animals does not possess this penetrating power.

(c) Serum from cases of Rocky Mountain Spotted Fever will agglutinate B. Proteus X 19, a quality also possessed by sera from cases of typhus fever.

(d) Guinea pigs recovered from old world

typhus fever are not immune to Rocky Mountain Spotted Fever.

(e) In suitable dilutions, the virus of Rocky Mountain Spotted Fever in infected animal blood will not pass through pieces of ordinary commercial chamois skin, although the red cells from which the virus can not be separated by centrifugation readily pass through."

J. H. Crouch, M. D.,
Epidemiologist, Montana State Dept. of Health.

Analyses, Selections, Etc.

Venereal Disease Control: Problems and Methods.

John H. Stokes, M. D., of Philadelphia, in an address before the American Public Health Association, said that the movement in the United States for the control of syphilis and gonorrhoea lies today somewhat up-grade from the bottom of a declivity, down which it gently subsided from the epochal peak of effectiveness reached during the World War. In marked contrast, the slower progress of our more phlegmatic overseas brethren, the British, whose national program scarcely assumed distinct form during the war, has in the end brought them apparently, or at least measurably, farther than our own. Today the English vital statistics are measuring, in what appear to be fairly trustworthy terms, a decline of nearly 50 per cent in the incidence of syphilis and gonorrhoea in the British Isles. Belgium, Germany and France are reporting comparative and in some respects confirmatory data. The United States is silent, save for the ready voice of assertion based on impression rather than facts. The ebb tide of a fiscal program built for war emergency has left the skeleton of a great public health campaign high and dry on the shoals of an unenlightened retrenchment policy.

A disease such as gonorrhoea, almost as common as measles, which affects from 50 to 60 per cent of males at some time in their life history, and whose complications are responsible for a considerable part of the specialties of gynecology and urology, is not a mere war emergency. A disease such as syphilis, which ranks among the foremost if not actually the first of all the causes of death which affect mankind, a disease which has five million presumptive victims in the United States alone, which produces 13 per cent of the insanity in our asylums and an unrecorded toll of prenatal mortality, deafness, visual handicap and blindness, cannot be returned to the obscurity of peace.

Sir Arthur Newsholme, on the basis of the British mortality figures from 1901 to 1925, and the British venereal disease clinic registration from 1918 to 1925, finds that the crude annual death rate from syphilis at all ages, based on the registrar general's review from 1924, has fallen from 53 in 1901, to 33 in 1924. Mortality from general paralysis of the insane has fallen from 70 in 1901, to 40 in 1924; that from tabes dorsalis has slightly increased from 13 in 1901, to 19 in 1924; aneurysm has decreased from 30 to 26; the combined rate from 166 to 118, and relative figures from 100 to 71, in this lapse of time. The most striking change is apparent beginning with 1919, when all the rates exhibited the most pronounced drop apparent in years, a decline that has been held consistently or become more pronounced between 1919 and 1924.

Sir Arthur Newsholme points out that a revision of these figures, such as Osler suggested, to include the occult death factor from syphilis, would place the disease with cancer, tuberculosis and pneumonia, as one of the four chief causes of death. The drop in mortality figures has taken place in the face of improved diagnosis and more complete registration. The decline in death rate of 1924 as compared with 1921 amounts to 29 per cent, and when 1917 is compared with 1924, it amounts to 32 per cent.

An equally interesting evidence of the effectiveness of the British antivenereal campaign is found in the decline of new cases of gonorrhoea and new cases of syphilis in the face of an increased number of clinics and a steadily increased total attendance from 1918 to 1925. In 1917 the total number of government clinics was 113, increased to 193 in 1925. The total attendance increased from 204,692 to 1,719,148. New cases of syphilis in 1918 were 26,912; in 1919, 42,134; in 1925, 22,588. Gonorrhoea, on the other hand, has shown a smaller decline, probably because of the lesser effectiveness of medical treatment control in this disease.

Bayet concludes that arsenical medication has reduced the contagious period in syphilis from three-fourths to four-fifths, although Newsholme questions the accuracy of this esti-

mate. As they stand, the figures constitute the greatest encouragement to workers for venereal disease control that has thus far appeared.

Preventive Problems in the Field of Venereal Disease Control.

Syphilology has a well defined preventive phase, thus far all too little stressed in teaching and propaganda. The control of gonorrhoea has a similar side, less developed, however, because of the lack of a specific form of treatment which rapidly reduces infectiousness, such as is available in dealing with syphilis. For increased emphasis on the preventive aspects of syphilis, the medical school must be responsible. It must shift its teaching point of view from outspoken consequences to prodromes and obscure beginnings. Instead of permitting the neurologist to leave the impression that tabes and general paralysis are the most significant aspects of neurosyphilis, the syphilologist must emphasize the fact that symptomless neurosyphilis detected only by examination of the spinal fluid years before the onset of either consequence is really the sort with which the practitioner should busy himself. Until medicine is taught preventively to the physician of the future, the individual side of the venereal disease problem continues to move under a cloud. Sooner or later, the venereal disease control movement must face squarely the issue of medical prophylaxis of the venereal diseases. The very clinic that treats venereal disease might become a center for the application of at least a partially effective prophylaxis.

Educational methods in the control of venereal disease have perhaps had their ablest exponents and their most thorough going employment in this country. It may be properly regarded as a glorious tradition that the United States entered the war on the side of the best rounded program for the prevention of syphilis and gonorrhoea ever devised. It took into account and utilized every educative, moral and constructive influence that could be brought to bear on the problem of keeping young men and women within sexual bounds. It is then indeed a tragedy of unfulfilment that today we have not a single figure that I know of to place beside the figures of continental countries in which this educational phase received so much less emphasis, to prove that our way bears the better fruit. The European emphasis has been on treatment as the great preventive, and their figures seem to be proving that it works and works well. We who have laid stress on education are, then, directly challenged to prove that the brochure, the leaflet, the lecture, the lantern slide and movie film, the parent-teacher league, the play-ground and social worker, on which hundreds of thousands of dollars have been spent, can compare in efficacy with an equal sum spent on arsphenamine and syringes and the personnel to use them. I may give it as my personal creed that they are worth the cost, if not to the obliteration of syphilis and gonorrhoea, then to the elevation of mankind above the muck in which those diseases thrive. The preventive worth of educational propaganda should be removed as rapidly as possible from the conjectural and impressionistic field in which it now lies and placed if possible on the sounder factual basis already developing about the preventive value of treatment.

Problems of Treatment.

In discussing problems of treatment, one may consider first and woeful difference that exists today between the field of gonorrhoea and that of syphilis.

Until there is a method of controlling infectiousness comparable to that available in the treatment of syphilis with arsphenamine, the movement against gonorrhoea limps on half a foot. The effect is apparent enough in the charts of Sir Arthur Newsholme, which show where the drop in venereal disease incidence is taking place—in syphilis, the more treatable and controllable, because the more thoroughly investigated disease, and not in the incidence of gonorrhoea.

In the syphilologic field, Jadassohn and Jeanselme, according to Anwyl-Davies, attribute the decline in syphilis in the countries surrounding France, as contrasted with a recrudescence within France itself, to the French substitution of bismuth, an inferior spirillicide, for arsphenamine. Drugs and their evaluation are indeed assuming a striking importance in preventive syphilology, if the difference between the spirillicidal action of arsphenamine and bismuth can make most of the difference between a 50 per cent drop in the incidence of syphilis in Germany, England and Belgium and a 20 per cent rise in

the city of Paris. Such a picture is probably overdrawn; but the place that drugs take in the control of syphilis is none the less supremely important. The problems that involve syphilotherapeutic agents at the present time include especially the following: Is the spirochete of syphilis becoming resistant to the agents now in common use against it? There is evidence that the blood Wassermann reaction is more difficult to reverse than it was ten years ago, even with identical technics of treatment and test. Relapse seems at times to be assuming a peculiar obstinacy and refractoriness—but this is probably a case of greater alertness and better recognition. Longer courses seem at times to accomplish less than short courses did ten years ago, but here again we deal with impression.

Simplification of treatment should be kept constantly in mind, so far as it is consistent with effectiveness—for simple but less efficient methods must not be substituted for slightly more difficult, effective ones. It is for this reason that my first instinct is to oblige the malarial therapeutists doubly to prove their ground.

The final and the crucial issue of modern clinical syphilology is that of the curability of the disease. While the results of five and ten year checks on treated patients which are now coming in, and the results of animal experiment, give us ground for high hopes, only time, repeated examinations, and autopsy on man can give us a final answer.

Research Organization and Problems.

First is the problem of finance. Research in the venereal disease, especially syphilis, involving the maintenance of animal hospitals of large size, to say nothing of laboratories, is an expensive affair. The tremendous costliness of research in this country of high wages and living standards is of course one of the most striking contrasts of our situation as compared with that of the European clinics, in which professional overcrowding and a lower living standard make it possible to secure able men at a pittance. It accounts to no small extent for the European origin of our most important syphilologic discoveries. As one of my good friends remarked to me, American clinicians are devoured by their patients, for the available personnel, even in a full-time clinical organization, never quite overtakes the routine, to say nothing of doing anything creative. The sequestration of a group for pure research thus becomes a problem in money getting on a large scale. Private wealth cannot easily be interested in a stigmatized enterprise like that of venereal disease control, bearing a label that is social anathema. Three sources of funds remain open: The great foundations, the public funds and the private contributions of the concerns who make money from the technical perfection and sale of the products of scientific advance in this field. The last mentioned should bear much more load than it has received.

As in the demonstration of the results of propaganda, in which our short-comings are manifest, so in the demonstration of the effect of treatment and the relative merit of different methods. We are unable to trace results. From 20 to 40 per cent is the best proportion of patients kept under observation, of the vast number that annually pass through our clinics. The perfection of follow-up becomes therefore one of the critical problems of the syphilis clinic; and social service, through whose aid it is usually done, plus the strong arm of the local public health officials, become two of the most important of research implements in this field of modern medicine.

Ethical and Social Collaterals.

It remains now to be seen whether the physician can be interested in other more social phases of venereal control, the more inspiring because the more constructive of character and the more expressive of idealism. Can he, for example, be made to tell the sincere and attentive student from the moral side of the tremendous wealth of personal knowledge of the sex habits and thinking of mankind which his work, like that of the priest, brings to his door? Can he be induced to see and study this material with an eye alert for other than purely medical problems? Such a consummation is devoutly to be wished. It will come to pass, and medical control of venereal disease will at last stand in its right relation to the scientific and the humanistic study of sex ethics, when the physician sees more science and less moral cock-sureness in the hygienist's program, and the hygienist finds the physician more of an idealist than he has believed him to be. The venereal disease problem plays great issues against one another. More than

one sincere mind had wondered whether, given perfected birth control and no more venereal disease, the bulwarks of the existing moral order will not collapse. Toward that inevitable day when decision in sex ethics shall be emancipated from fear of loathsome disease consequences and be determined solely by high principle and a sense of profound responsibility to the partner and the race, hygienist and venereologist should, and will, move in step.—(*Jour. Amer. Med. Assn., March* 10, 1928).

L. T. P.

Roentgenology

Roentgen-Ray Diagnosis.

LEOPOLD JACHES, M. D., Radiologist, Mt. Sinai Hospital, New York City.

(*Continued from page* 278)

The Spinal Column

The spine is subject to practically the same lesions as occur in other bones and joints. The most frequent lesion is tuberculosis (Pott's disease), which mainly affects the lower thoracic and lumbar areas; less so the cervical region. In this disease, which first attacks the intervertebral disks and soon invades the bodies, which become softened and decalcified and then collapse, there results very marked deformity—kyphosis. This is, especially in advanced stages, accompanied by a cold abscess, which is shown as a dense elliptic shadow hugging both sides of the spine.

In contradistinction to this is metastatic carcinoma of the spine. Even in the osteoclastic variety the intervertebral spaces remain clear, and the bodies, though decalcified, retain their shape and size, the tough carcinomatous tissue preventing their collapse until an advanced stage is reached.

Syphilis of the spine is infrequent. Its manifestation is generally a slight destruction of the vertebrae and increased density of the parts remaining intact. The diagnosis is generally made by the history, the positive Wassermann reaction and the result of antisyphilitic treatment.

Sarcoma of the spine, as a rule, causes marked destruction of the bodies affected and is followed by early metastases in the ribs, clavicles, and other parts of the spine.

Osteomyelitis is rare. Typhoid will occasionally affect vertebrae, in which it causes localized rarefactions. The history will help make the diagnosis.

In arthritis (spondylitis) the borders of the vertebrae show osteophytes, which may reach enormous extent and cause complete coalescence between them.

Trauma may result in fracture of the auricular processes with dislocation, crushing of one or more vertebrae, or fracture of the transverse processes in the lumbar region.

The pelvis may be the site of any of the lesions affecting other flat bones or the vertebrae.

Tumors of the spinal cord and its meninges are not demonstrable by the roentgen ray except when they erode a contiguous vertebra. The introduction of iodized oil, however, helps greatly to localize these tumors and sometimes to determine their extent. The injection is made through the cisterna, the patient in the upright position, and roentgenograms are made shortly afterward. If a tumor is present it will generally block the canal, and the iodized oil will stay there for days, if not forever. If no tumor is present, the iodized oil quickly descends to the upper part of the sacrum, where it is recognized as a small, dense, inverted triangle.

The Skull and Brain

The skull is treated separately because the bony texture, which is peculiarly its own, makes the various inflammatory, constitutional or neoplastic conditions assume entirely different forms from those of the long bones. It is less often affected by the more common diseases of the long bones, while in some of the rarer diseases, such as Paget's, it is more frequently and more extensively involved than the other bones. Another reason for a separate consideration of the skull is that it is subject to lesions which occur as a secondary manifestation resulting from diseases involving the brain, its cavities or its meninges.

Osteomyelitis of the skull is not as frequent as that of the long bones. There is less periosteal reaction, and there are irregular small areas of rarefaction alternating with those of more or less normal bone.

Syphilis may appear as a gumma causing a greater or smaller defect in the skull, or a

marked localized thickening, or as scattered aeras of thickening and rarefaction.

Carcinoma, hypernephroma, myeloma and other malignant tumors may metastasize in the skull, producing more or less numerous, small areas of bone destruction which are circular and clear cut as though they had been punched out by an instrument. Less frequent tumors are chloroma, neuroblastoma and the benign cholesteatoma. Chloroma is apt to be general but the skull metastases may be the first symptoms. Osteomas, however, are found quite frequently.

Erosions of the skull are often seen as the result of localized pressure due to a neoplasm of the brain or its meninges. Brain tumors are not demonstrable directly by the roentgen ray unless they are completely or partly calcified; indirectly they are demonstrated by causing localized areas of pressure on the bone, still less indirectly by generalized intracranial pressure. Generalized intracranial pressure is shown by erosion or complete disappearance of the sella turcica, diastasis of the sutures and thinning of the cranial bones, in which digital depressions are seen that closely fit the convolutions of the brain.

Tumors of the hypophysis cause enlargement of the sella turcica, thinning of its clinoid processes, and sometimes depression or perforation of the floor into the sphenoid sinus. Acromegaly is associated with enlargement of the facial bones and soft tissues, with prognathism and an enormous enlargement of the nasal sinuses. The bones and soft tissues of the hands and feet are also enlarged.

In recent years Dandy and his followers have been able accurately to localize intracranial tumors and other lesions by introducing air into the ventricles through a trephine opening and studying their abnormalities. Independently of him some German investigators have obtained similar results by injecting air by the endolumbar method.

Fractures of the skull are seen as linear, branching or stellate transparencies. Great care must be observed not to mistake blood vessel grooves or sutures for them. Depressed fractures can be diagnosed only by means of stereoscopic roentgenograms.

Disease of the nasal accessory sinuses generally causes a decrease in their transparency, often obliterating all detail in them. Care must be exercised when diagnosing disease of the frontal sinuses by mere lack of density; they are often very small and therefore less transparent, and not infrequently are entirely absent. Lateral views should always be made to determine their presence or size.

Disease of the mastoids is shown by general haziness in the early stages and by destruction of the septums in the later stages. Both sides should be examined for comparison.

Roentgen-ray examination of the teeth will show the presence of unerupted ones and their position, cortical abscesses by rarefaction at the root, pericementitis and pyorrhea by the lesser or greater transparent areas skirting the teeth and their roots. But one should guard against the overlapping maxillary sinuses which may simulate a transparency at a dental root.

Dentigerous cysts are shown as areas of transparency containing a tooth.

Other lesions of the jaw are similar to those of other bones and need not be dwelt on here.

(To be continued.)

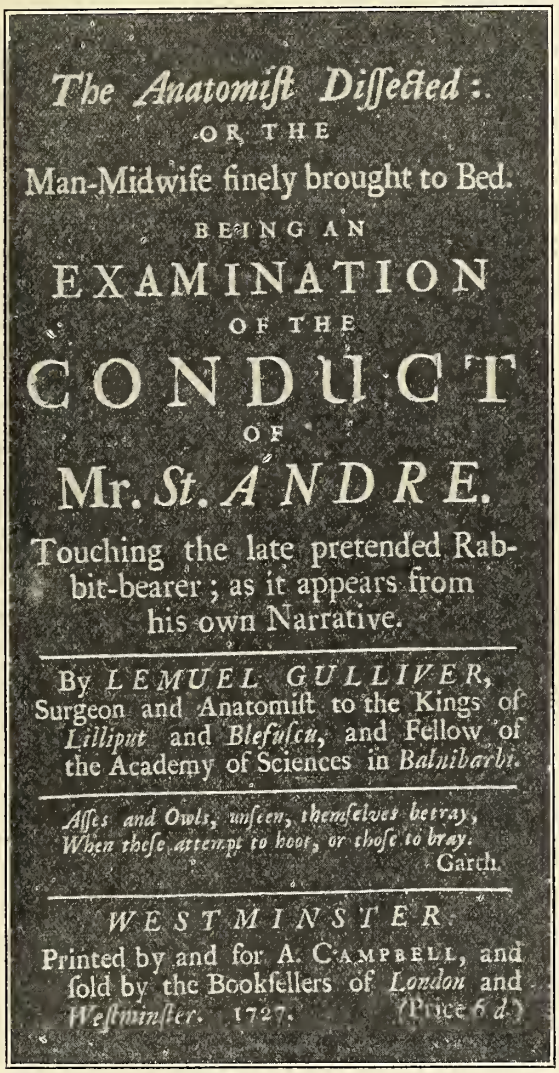
Bibliotheca Obstetrica

Lemuel Gulliver.

Gulliver (Lemuel) The anatomist dissected; or the man-midwife finely brought to bed; being an examination of the conduct of Mr. St. André; touching the late pretended rabbit-bearer; as it appears from his own narrative. 34 pp. 8°. *Westminster, A. Campbell*, 1727.

This item throws an interesting side light upon the state of the English mind at the time Swift's great satire appeared. This period is interesting to us because it antedates by only a few years the public appearance of the obstetrical forceps. Mary Toft, or Tofts (1701?-1763), a poor ignorant woman, who had borne her husband three children, was frightened by a rabbit (of all animals) while at work in the field. This so reacted upon her reproductive system that in a few months she began to bear first the viscera of a pig and then various portions of rabbits. She is said to have had altogether a litter of 15. She was attended by John Howard, the village apothecary, who had practiced mid-wifery for 30 years. Howard was completely deceived by the woman and summoned St. André, a surgeon, to the West-

minster Hospital. St. André posted to Guilford with his friend, Samuel Molyneux, the secretary to the Prince of Wales. St. André drew up a narrative of the event that caused great excitement. George I ordered Ahlers, surgeon to his German household, to investigate the matter. Ahlers removed a portion of another rabbit so unskilfully that his obstetric technic was criticized by Howard. His report was a non-committal one. The king accordingly dispatched Limborch and Sir Richard Manningham to report on the case. Manningham promptly satisfied himself that the woman was an imposter and wrung a confession out of her in the presence of Dr. James Douglas, the Duke of Montagu and Lord Baltimore. The imposture gave rise to a torrent of pamphlets and squibs, many of which were highly indecent. Hogarth lashed the temporary craze in the second version of his plate lettered "Credulity, Superstition, and Fanaticism" (1762) and also in "The Canicularii, or the Wise Men of Godliman in Consultation." Voltaire gave a pleasant account of St. André's doctrine of "générations fortuites". A portrait of Mary Tofts was mezzotinted by Faber after Laguerre. The following list of the pamphlets that appeared at the time gives an idea of the disputatiousness of the times:


The Anatomist Dissected:
OR THE
Man-Midwife finely brought to Bed.
BEING AN
EXAMINATION
OF THE
CONDUCT
OF
Mr. St. ANDRE.
Touching the late pretended Rabbit-bearer; as it appears from his own Narrative.
By LEMUEL GULLIVER,
Surgeon and Anatomist to the Kings of Lilliput and Blefuscu, and Fellow of the Academy of Sciences in Balnibarbi.
Asses and Owls, unseen, themselves betray,
When these attempt to hoot, or those to bray.
Garth.
WESTMINSTER:
Printed by and for A. CAMPBELL, and sold by the Booksellers of London and Westminster. 1727. (Price 6 d.)

An exact Diary by Sir R. Manningham, 1726; 8 vo.; A Short Narrative 1726 & 1727, 8 vo.; Remarks on a Short Narrative by Thos. Brathwaite, 1726, 8 vo.; Some Observations by Ahlers, 1726, 8 vo.; The several Depositions of Edward Costen, etc., 1727, 8 vo.; The Sooterkin Dissected, 1726, 8 vo.; The Anatomist Dissected ..... by Lemuel Gulliver, 1727, 8 vo.; Advertisement occasioned by some Passages in Sir. R. Manningham's Diary by J. Douglas, 1727, 8 vo.; Much Ado about Nothing, or the Rabbit Woman's Confession, 1727, 8 vo.; A Letter from a Male Physician, 1726, 8 vo.; The Doctors in Labour, or a New Wim-Wam from Guilford, 1727; The Discovery, or the Squire turned Ferret, 1727, fol. and 8 vo.; St. André's Miscarriage, 1727; The Wonder of Wonders, Ipswich, 1726, Bound in Rabbit-Skin.

Woman's Auxiliary, Medical Society of Virginia

DOCTOR: PLEASE CALL ATTENTION OF YOUR WIFE TO THIS DEPARTMENT.

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary and Treasurer, Cottage Toll Road, R. F. D., Norfolk, Va.

Minneapolis Meeting of Auxiliary.

The sixth annual session of the Woman's Auxiliary to the American Medical Association was held in Minneapolis, Minnesota, June 11-15, 1928. Over 1,200 women registered and they were delightfully entertained and cared for by the local auxiliaries.

The business meetings were largely attended, 400 women being present at the all day session

of June 14. Much interest was given to the reading of the papers and State Reports. There are now well organized and efficient units in 30 states.

The abstracted proceedings will be printed at an early date and a copy sent to the entire membership.

The following officers were elected:

PRESIDENT: Mrs. Allen H. Bunce, 360 Ponce de Leon Avenue, N. E., Atlanta, Georgia.

PRESIDENT-ELECT: Mrs. George H. Hoxie, 3719 Pennsylvania Avenue, Kansas City, Missouri.

1ST VICE-PRESIDENT: Mrs. Evarts V. De Pew, 115 East Agarita Avenue, San Antonio, Texas.

2ND VICE-PRESIDENT: Mrs. David W. Parker, 52 Clark Street, Manchester, New Hampshire.

3RD VICE-PRESIDENT: Mrs. Horace Newhart, 212 West 22nd Street, Minneapolis, Minnesota.

4TH VICE-PRESIDENT: Mrs. Frank W. Cregor, 1621 North Meridian Street, Indianapolis, Indiana.

TREASURER: Mrs. Irvin Abell, 1433 South Third Street, Louisville, Kentucky.

SECRETARY: Mrs. M. T. Edgerton, 788 Penn Avenue, Atlanta, Georgia.

PARLIAMENTARIAN: Mrs. F. L. Adair, 2500 Blaisdell Avenue, Minneapolis, Minnesota.

DIRECTORS FOR TWO YEARS: Mrs. John O. McReynolds, Dallas, Texas; Mrs. Wayne W. Babcock, Philadelphia, Pennsylvania; Mrs. A. Haines Lippincott, Camden, New Jersey.

DIRECTORS FOR ONE YEAR: Mrs. F. P. Gengenbach, Denver, Colorado; Mrs. William E. Parke, Philadelphia, Pennsylvania; Mrs. J. T. Christison, Minneapolis, Minnesota.

CHAIRMEN OF COMMITTEES:

Organization: Mrs. A. T. McCormack, Louisville, Kentucky.

Health Education: Mrs. Geo. H. Hoxie, Kansas City, Missouri.

Hygeia: Mrs. A. B. McGlothlan, St. Joseph, Missouri.

Publicity: Mrs. T. C. Terrell, Fort Worth, Texas.

Program: Mrs. Southgate Leigh, Norfolk, Virginia.

Finance: Mrs. G. Henry Mundt, Chicago, Illinois.

Entertainment: Mrs. William Knykendall, Eugene, Oregon.

Public Relations: Mrs. E. H. Cary, Dallas, Texas.

Revision of By-Laws: Mrs. Morris Fishbein, Chicago, Illinois.

SPECIAL APPOINTMENTS:

Auditor: Mrs. C. W. Roberts, Atlanta, Georgia.

Historian: Mrs. E. V. De Pew, San Antonio, Texas.

Committee on Health Films: Chairman: Mrs. John O. McReynolds, Dallas, Texas.

Committee on Resolutions: Chairman: Mrs. J. N. Hunsberger, Norristown, Pennsylvania.

Committee on Credentials and Registration: Chairman: Mrs. James N. Brawner, Atlanta, Georgia.

Special Advisory Committee: Mrs. S. C. Red, Houston, Texas, and Mrs. Seale Harris, Birmingham, Alabama.

How the Woman's Auxiliary Can Help the Doctors of Virginia.

By A VIRGINIA DOCTOR.

1. By telling the "True Story of Medicine" to the public. In their contact with other women in social life, in various societies, and in welfare movements, the members of the Auxiliary have abundant opportunity to overcome misunderstandings and misconceptions which are widely prevalent. In many instances such a situation is due to propaganda from various irregulars and cults. In a quiet and tactful way the women can effectively overcome such misrepresentation.

2. By educating the public as to the great good which will follow periodical health examinations, especially among women.

3. By assisting the doctors in making accurate and prompt reports of births.

4. By helping the doctors to regularly attend local and distant medical meetings and clinics, letting the public know that such visits will enable the doctors to give better service.

5. By making the local medical meetings more attractive, furnishing entertainments from time to time, and bringing the doctors closer together, as well as the members of the doctors' families.

6. By taking a personal interest in the offices of the individual doctors, making them more attractive, keeping them clean and seeing that they are well heated in Winter. A little rivalry among the members of the local

Auxiliary would bring about a revolution in the offices of the average doctors.

7. By helping the doctors to create a better sentiment in the communities in regard to health and welfare matters, and the enactment of the proper State and County Laws.

8. Finally, in these difficult times, when there appear certain unfortunate tendencies, especially among young people, regarding dress and unusual habits of life, the members of the Woman's Auxiliary in the various counties could, by concerted action, in conjunction with the local doctors and other thoughtful women of the counties, combat such dangerous tendencies, and bring our people back to a saner mode of living.

Truth About Medicine

In addition to the articles enumerated in our letter of May 25th, the following have been accepted:

Abbott Laboratories
- Tablets Ephedrine Hydrochloride—Abbott, ¼ grain.

Deshell Laboratories, Inc.
- Petrolagar (Unsweetened)

Mead Johnson & Co.
- Mead's Standardized Cod Liver Oil, Flavored.

Parke, Davis & Co.
- Glaseptic Ampoules Ephedrine Sulphate—P. D. & Co., 0.05 Gm. (¾ grain), 1 c.c.
- Capsules Ephedrine Sulphate—P. D. & Co., 0.05 Gm. (¾ grain). Paroidin.

Prophylacto Mfg. Co.
- Capsules Ephedrine Hydrochloride—Pemco, 0.3 Gm.
- Capsules Ephedrine Hydrochloride—Pemco, ¼ grain.

E. R. Squibb & Sons
- Squibb's Vitavose.

Swan-Myers Co.
- Gentian Violet Capsules—Swan-Myers, 1 grain.

NEW AND NON-OFFICIAL REMEDIES

Pollen Extracts—Swan-Myers (New and Non-official Remedies, 1928, p. 38).—Also marketed in packages of one vial containing 2,000 units. Swan-Myers Co., Indianapolis.

Concentrated Pollen Extracts—Swan-Myers.—In addition to the products listed in New and Non-official Remedies, 1928, p. 30, the following product has been accepted: Biennial Sage Concentrated Pollen Extract—Swan-Myers. Swan-Myers Co., Indianapolis.

Glaseptic Ampoules Solution Glucose, 50 per cent, 20 c.c.—Each ampule contains dextrose, U. S. P., 10 Gm., in distilled water, to make 20 c.c.; buffered with sodium citrate, 0.25 per cent. Parke, Davis & Co., Detroit.

Glaseptic Ampoules Solution Glucose, 50 per cent, 50 c.c.—Each ampule contains dextrose, U. S. P., 25 Gm., in distilled water, to make 50 c.c.; buffered with sodium citrate, 0.25 per cent. Parke, Davis & Co., Detroit. (Jour. A. A. M., June 16, 1928, p. 1945).

Bismuth Sodium Tartrate—Searle.—A basic sodium bismuth tartrate containing from 72.7 to 73.9 per cent of bismuth. Its use is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis. (See Bismuth Compounds, New and Non-official Remedies, 1928, p. 104). The product is administered by intramuscular injection. It is supplied in the form of 2 c.c. ampules containing bismuth sodium tartrate—Searle, 0.03 Gm., benzyl alcohol, 0.040 Gm., sucrose, 0.5 Gm. in water sufficient to make 2 c.c. G. D. Searle & Co., Chicago.

Tablets Ephedrine Hydrochloride—Abbott, ¼ grain.—Each tablet contains ephedrine hydrochloride—Abbott (New and Non-official Remedies, 1928, p. 176), ¼ grain. Abbott Laboratories, North Chicago.

Capsules Ephedrine Sulphate—P. D. & Co., 0.05 Gm. (¾ grain).—Each capsule contains ephedrine sulphate—P. D. & Co. (New and Non-official Remedies, 1928, p. 178), 0.05 Gm. Parke, Davis & Co., Detroit.

Glaseptic Ampoules Ephedrine Sulphate—P. D. & Co., 0.05 Gm. (¾ grain), 1 c.c.—Each ampoule contains ephedrine sulphate—P. D. & Co. (New and Non-official Remedies, 1928, p. 178), 0.05 Gm. in 1 c.c. Parke, Davis & Co, Detroit. (Jour. A. M. A., June 30, 1928, p. 2103).

PROPAGANDA FOR REFORM

Pancrepatine.—The Anglo-French Drug Co., which markets "Pancrepatine A. F. D.", has not requested an examination of the preparation by the Council on Pharmacy and Chemistry. "Pancrepatine A. F. D." is stated to be "a combination of a Special Extract of the Pancreas and Hepatic Extract. . . ." It is claimed that the oral administration of the preparation results in "Reduction of Glycemia" and "reduction and sometimes total disappearance of glycosuria." There is no convincing evidence to show that any preparation taken by mouth is an effective means of producing the characteristic action of insulim. (Jour. A. M. A., March 3, 1928, p. 714).

Auriculator Not Acceptable.—The Council on Physical Therapy reports unfavorably on the Auriculator, submitted to the Council by Dr. Maury M. Stapler, Macon, Ga. It is stated to be a device for treating certain classes of deafmutism. The apparatus is a slightly different adaptation of a principle that has long been employed in the treatment of tubotympanic adhesive processes. The Council declares the Auriculator inadmissible for inclusion in the list of devices for physical therapy which are acceptable (1) because no scientific evidence has been presented to warrant the claim that it can be used successfully in treating deafmutism and (2) because the descriptive material submitted with the device contains unscientific and incorrect statements as to the causes of deafmutism. (Jour. A. M. A., March 10, 1928, p. 767).

Barbital Addiction.—The wide use of hypnotic preparations by the public has brought new problems for solution. When a single practitioner can report a hundred cases of acute poisoning or chronic addiction with one of the newer hypnotic drugs, the situation is serious. Barbital, introduced as veronal, has an increasing lay popularity for self administration. Its habit-forming propensities are sufficiently well recognized to merit the special designation of barbitalism or veronalism. A host of proprietary hypnotics now on the market may induce in greater or less degree the same result. Addiction to barbital appears not to stop with the production of moderate

euphoria. Judgment, orientation as to time, and insight are probably the most severely harmed of the psychic faculties and are the last to clear up in convalescence. The "safe" hypnotics may become menacing to the public welfare. (Jour. A. M. A., March 10, 1928, p. 769).

Vitamins A and D in Cod Liver Oil.—Accumulated evidence seems to have established the fact that vitamin A is not identical with the antirachitic factor; as a consequence, vitamin D has been postulated. Work has been published which shows that some cod-liver oils, rich in vitamin A were poor in vitamin D and that others rich in vitamin D were poor in vitamin A. The importance of this matter may be appreciated when it is pointed out that some commercial firms whose products have a satisfactory vitamin A content claim, ipso facto, a satisfactory content of the antirachitic factor vitamin D. The Council on Pharmacy and Chemistry has previously attacked this fallacy. In the new section on Vitamin Foods to appear in the chapter on Medicinal Food in New and Non-official Remedies, 1928, the Council states that it does not feel justified in requiring any specific test or standard of antirachitic potency, but it announces the policy of encouraging manufacturers to adopt and publish such methods of testing as will enable them to guarantee a vitamin D potency for their products. For products admitted to New and Non-official Remedies the Council permits no claim of vitamin potency unless it is backed up by adequate tests for the kind of potency claimed. (Jour. A. M. A., March 10, 1928, p. 770).

The Vit-O-Net Quackery.—Credulity moves in waves and quackery rides on the crest of the wave. The 1927-1928 brand of medical humbug is Magnetism with a capital "M." A concern known as the Vit-O-Net Corporation (previously the Vit-O-Net Manufacturing Co.), and having headquarters in Chicago, puts out a large sized electric heating pad or blanket which sells for $102.50. The concern that exploits it evidently realizes that for one person that would buy its device as a heating pad, there are fifty who will buy it as a cure for whatever ails them. From the testimonials and claims made by the exploiters it appears that the Vit-O-Net blanket cures cancer, arthritis, Bright's disease, eczema, neuritis, paralysis, anemia, low blood pressure, high blood pressure, goiter, epilepsy, asthma, prostatic trouble, deafness, and various other conditions. The Vit-o-Net blanket is a convenient and expensive way of applying continuous heat to the body. Further than this one cannot truthfully go. The curative value of the Vit-O-Net blanket is that of heat which differs not at all from that developed from a hot water bottle or of a hot brick wrapped in a sock! (Jour. A. M. A., March 10, 1928, p. 789).

Epinephrine and Ephedrine in Relation to Blood Pressure.—The action of ephedrine on the circulation is different from that of epinephrine. While the latter is a powerful heart stimulant, ephedrine is a direct depressant to the heart. A heart that has been depressed by continued low blood pressure is so sensitive to the depressant action of ephedrine that the poor condition of the circulation may be aggravated by it. It is also much feebler as a vasoconstrictor than is epinephrine. Hence, as a circulatory stimulant, ephedrine has been a disappointment. (Jour A. M. A., March 10, 1928, p. 791).

Relative Safety of Sedative Drugs.—Sulphonmethane (sulphonal) and sulphonethylmethane (trional) have to a large extent been superseded by phenobarbital (luminal) and barbital (veronal), especially because the sulphonmethanes are apt to make the patient drowsy the day after the ingestion, and are liable to produce an alteration in the blood which manifests itself by hematoporphyrinuria. Barbital is a relatively safe but feeble hypnotic which may be preferred to all others when a mild effect suffices. Phenobarbital is a much more potent drug. It is safe when given in a dose of from 0.1 to 0.2 Gm. It is contraindicated in the presence of marked asthenia and in nephritis. (Jour. A. M. A., March 10, 1928, p. 792).

BiSoDol.—The advertising of the "BiSoDol Company" states that BiSoDol is composed of "Bismuth Subnit. — Magnes. Carb. — Sodium Bicarb.— Carica Papaya — Diastase—01. Menth-Pip" but contains no information in regard to the amount of each ingredient. The Council on Pharmacy and Chemistry has not examined the preparation, nor has the A. M. A. Chemical Laboratory considered it worth while to analyze this "shotgun" mixture. (Jour. A. M. A., March 10, 1928, p. 793).

Argyrol Omitted from N. N. R.—Argyrol is included in New and Non-official Remedies as a brand of mild silver protein, U. S. P. At the expiration of the period for which Argyrol stood accepted, the Council on Pharmacy and Chemistry informed the A. C. Barnes Company that the advertising claims for therapeutic efficacy of this product went beyond those of mild antiseptic or protective value allowed for mild silver protein and asked that the firm present evidence to substantiate these claims; the firm was also informed that in order to permit the continued acceptance of the product the labels and advertising must bear the pharmacopeial title, mild silver protein, as a synonym. The firm presented no satisfactory evidence for the therapeutic claims in question and refused to mention the pharmacopeial name on the labels and advertising of Argyrol. The Council therefore voted to omit Argyrol from New and Non-official Remedies and authorized publication of its report explaining this action. (Jour. A. M. A., March 17, 1928, p. 849).

Proprietary Preparations and Proprietary Names.—The rule of the Council on Pharmacy and Chemistry of the American Medical Association provides that, when a proprietary substance is admitted to the U. S. Pharmacopeia, it will be retained in New and Non-official Remedies only if the official name is given prominence on the labels and in the advertising. The justice of this rule concerning proprietary names cannot be questioned. It is in the interest of scientific medicine and of medical progress. The history of Argyrol, which the Council has been obliged to omit from New and Non-official Remedies for conflict with this rule, is another example of the manner in which clinical evidence, none too carefully obtained, may boost a new remedy into popularity beyond its due. The promoter of a proprietary preparation, riding on the crest of a wave of popularity, is seldom willing to come down to the level of the quiet sea when the storm subsides. The Council has examined calmly and dispassionately the therapeutic claims made for Argyrol and has been unable to find evidence for some claims which it terms essentially misleading. Furthermore, the manufacturer is apparently unwilling to adopt the pharmacopeial synonym for it. The insistence on this synonym is important that physicians may fully comprehend the nature of the substance that they are using. The first duty of any one working in the field of medicine, be it investigator, teacher, physician or manufacturer, is to the public that is being served. This policy has been fundamental in

compelling the omission of Argyrol. (Jour. A. M. A., March 17, 1928, p. 855).

Absorption of Insulin from the Alimentary Tract.—In recent experiments advantage has been taken of the antitryptic effect of blood serum to protect insulin given by oral paths from pancreatic digestive destruction. Observations on a series of depancreatized dogs prove that insulin protected by blood serum from the proteolytic destruction of the digestive enzymes can be absorbed in significant amounts from the alimentary tract. While the experiments are promising, this is not the story of a completely dependable method of oral therapy; the results do not establish the usefulness of the host of proprietary insulin substitutes proposed for oral use. (Jour. A. M. A., March 24, 1928, p. 985).

Radio-Rem Omitted from N. N. R.—The Council on Pharmacy and Chemistry reports that a report announcing the omission of Radio-Rem was prepared in 1925, but not published at the time because the Radium Ore Revigator Company stated that it had purchased the Radium Therapy Corporation which controlled the Radio-Rem outfits and that these were no longer marketed. Recently, the Council received a letter from the Radium Ore Revigator Company which suggested that the former recognition of the Radio-Rem may be used as a means of exploiting the "Revigator (Health Spring Strength)." The Council authorized publication of its report, explaining the omission of Radio-Rem from New and Non-official Remedies. The report explains that Radio-Rem is an apparatus designed for the production of radioactive drinking water, marketed by the Radium Therapy Corporation, San Francisco, California. The Council found that there was a close connection between the firm which marketed the Radio-Rem outfits and the firm which exploited the Radium Ore Revigator, an apparatus exploited to the public with misleading claims. The Council directed the omission of the Radio-Rem outfits from New and Non-official Remedies because they were used to further the sale of the Radium Ore Revigator, which is exploited to the public with false claims for the therapeutic efficiency of radium emanation. (Jour. A. M. A., March 31, 1928, p. 1038).

Sanatology "The Only Science of Health."—"Sanatology" is a new cult. In 1927, Percival Lemon Clark went before a committee of the Legislature of Illinois in behalf of "House Bills Nos. 296, 297 and 411." These bills were for the purpose of getting legal recognition of the cult, Sanatology. Dr. Clark has advertised through newspapers and by Radio. He sums up his attainments, thus: "I cure the sick, cure the desperately sick, cure asthma, cure rheumatism, cure hay fever, cure goiter, and all the rest of the 'incurable' diseases." Dr. Clark's merchandise accessories comprise such products as "Dr. Clark's Dextrinized Wheat Health School Brand," "Cereal Bran," "Cracked Wheat," "Steel Cut Oatmeal," and "Dr. Clark's Cooked Whole Wheat." Then there is a "Sanatology Blower," the "Sanatological Enema Bag and Attachments," the "Sanatological Oil" and the "Health School Laxative Tablet." Dr. Clark's *magnum opus* is "How to Live and Eat for Health," which is a book of 240 pages, devoted mainly to Dr. Clark's peculiar theories, dietetic and medicinal, and incidentally, to advertising Percival Lemon Clark and the Health School. (Jour. A. M. A., March 31, 1928, p. 1060).

Transkutan.—According to the advertising, "Transkutan" is being marketed by Transkutan, Inc., New York. Other advertising bears the name of P. L. Frailey. Neither Transkutan, Inc., nor P. L. Frailey has requested an examination of Transkutan by the Council on Pharmacy and Chemistry. The preparation is referred to in the advertising as a "brine combination of natural mineral springs and extracts of plants abounding in terpenes." It appears that the public is to be exploited by means of newspaper advertisements and, as is so often the case, that physicians are to be the unsuspecting promoters of this proprietary nostrum. (Jour. A. M. A., March 31, 1928, p. 1064).

Book Announcements

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Medicine, Surgery, etc. By Leading Members of the Medical Profession Throughout the World. Edited by HENRY W. CATTELL, M. D., and Collaborators. Volume II, Thirty-Eighth Series, 1928. Philadelphia and London. J. B. Lippincott Company. 1928. Octavo of 344 pages. Cloth.

Nurses, Patients, and Pocketbooks. Report of a Study of the Economics of Nursing Conducted by the Committee on the Grading of Nursing Schools. By MAY AYRES BURGESS, Director. New York City. 1928. Octavo of 618 pages. Cloth.

Methods and Problems of Medical Education. (Ninth Series). Division of Medical Education, THE ROCKEFELLER FOUNDATION. 61 Broadway, New York, N. Y., U. S. A. 1928. Paper 386 pages.

Conserving the Sight of School Children. A Program for Public Schools. Report of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association with the Co-operation of the National Society for the Prevention of Blindness. Second Edition. Revised. 60 pages, illustrated. Available at cost, National Education Association, 1201 Sixteenth Street, Northwest, Washington, D. C.; American Medical Association, 535 N. Dearborn Street, Chicago, Ill.; or National Society for the Prevention of Blindness, 370 Seventh Avenue, New York, N. Y. Price 35 cents net.

Book of Diets. McGuire Clinic and St. Luke's Hospital, Department of Dietetics, 1000 West Grace Street, Richmond, Va. 1928 Edition. The Introduction states that "This system has been found so valuable to us and the demand for copies of the book so great that it was felt that it might be of assistance to other individuals or groups besides ourselves." 50 pages.

Goiter Prevention and Thyroid Protection. By ISRAEL BRAM, M. D., Medical Director, Bram Goiter Institute, Upland, Pa.; formerly Instructor in Clinical Medicine, Jefferson Medical College, Philadelphia, etc. Philadelphia. F. A. Davis Company, Publishers. 1928. Octavo of 327 pages. Illustrated. Cloth. Price, $3.50 net.

United Fruit Company. General Offices: Boston, Massachusetts. Medical Department. Sixteenth Annual Report. 1927. Octavo of 368 pages. Paper.

Forty-second Annual Report of the Bureau of American Ethnology. To the Secretary of the Smithsonian Institution. 1924-1925. United States Government Printing Office, Washington. 1928. Quarto. 900 pages. Cloth.

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Editorial

Acute Appendicitis.

After nearly a half century of experience in the management of acute appendicitis, as a disease problem, one is rather surprised at the recent reference in publications of today, to the probability of a greater incidence and mortality of this disease.

Interpretations of statistics are difficult. Conclusions reached are not always true or accurate. Factors connected with machinery of statistical study and factors related to domain of diagnosis, and treatment, make conclusions reached as to whether or not there is an increase in the incidence of appendicitis or an increase of death rate in the disease difficult and uncertain.

But, nevertheless, there remains the fact of it as a known occurrence and as a known cause of death; and it is probably true that a too great incidence of the malady takes place, as does a too frequent death in the light of our knowledge of today. There is probably no abdominal disease of which the public is more generally informed. Popular opinion of its occurrence and its proper treatment is accepted. Where surgeons are able to report hundreds of operations for the removal of the diseased appendix without death, one has little hesitation in reaching the conclusion of the proper treatment of the malady. It is a surgical condition. It responds to skilled surgical treatment. How can the death rate of acute appendicitis be reduced?

By prevention of the disease: This is a problem far beyond present knowledge or present day efficiency in preventive medicine. The general fact remains, however, that the occurrence of appendicitis is influenced by infection elsewhere in the body, either as a chronic focal infection or as an acute bacterial invasion. It may be further remarked, that functional integrity of the digestive tract enters materially into the incidence of this affection. For instance, Hall and Dyos, as cited in Oxford Medicine, under this title, observed that the "normal" incidence of appendicitis at Camp Logan, Texas, was 10.4 per 1,000, but during the months of November and December, 1918, during and following the epidemic of influenza, incidence of the disease increased to 44.4 per 1,000.

What is true of this influenza is probably true of other diseases, as tonsillitis, pneumonia, typhoid fever, renal infections, as well as chronic infections of nose, mouth, throat, gallbladder and tract, urinary tract, chronic misfunction of gastro-intestinal tract, from errors of diet and habits of eating.

The effort of preventive medicine in appendicitis, then, appears to lie along the lines of freeing the body of infections and the restoration of the acutely infected body to a normal state of resistance before dietetic errors of living are resumed by the patient. Of course, medicine can never sanction resumption of habits of eating or of diet that are contrary to good health, but it is too much to hope that professional advice will be followed, in line of moderation or careful dietary for any great length of time after a patient has passed long from under the orders and daily treatment of his physician, but, yet, it is worth while to endeavor to extend the duration of adherence to medical instruction as far as possible into what one calls his "normal way of living and eating."

Prevention of death from appendicitis rests in public and professional co-operation. Public co-operation must be attained by instruction to obtain immediately professional advice in all pains in abdomen and not to give cathartics or purgatives.

The serious danger of appendicitis is much augmented by purgation. Surgical operation upon a highly irritated and active gut is more risky and difficult. The public must know that pain in acute appendicitis is not removed by purgation, but probably made worse; to say

nothing of the aggravation of the field of operation into a state of extreme danger. The pain must be recognized as probably first felt in "pit of the stomach", and later in the "right side", resembling often ordinary "belly-ache." Then there is tenderness at McBurney's point, rigidity over right rectus muscle and right side of the abdomen. There is co-incident irritability of the stomach, signified by nausea, and, may be, vomiting. There is, usually, a rise of temperature of the body and acceleration of pulse, in keeping. The blood displays symptoms of inflammation, usually, as disclosed by a white cell count of 12,000 to 16,000. Soudern felt, that regardless of leucocytoses, a polynuclear count below 70 per cent means absence of pus formation or gangrene; above 70 per cent, it is indirect proportion to intensity of inflammation in the appendix.

Pain in abdomen may mean other things: acute pyelitis; acute cholecystitis, acute salpingitis and ovaritis; rupture of extra-uterine pregnancy; perforation of gastric or intestinal ulcer; pneumonitis and pleuritis; renal or ureteral colic. A diagnosis is not so easy to make and should be carefully considered before the next step is taken to lessen the mortality in acute appendicitis.

Luminal Skin Eruption.

Phenobarbital or luminal in the past fifteen years has become more and more a favorite in practice. This increasing application to meet the needs of a sedative in practice, emphasizes the importance of looking for harmful effects of the prolonged or occasional use of the drug.

Memminger* points out, with illustrative case reports, the toxic action of drug in formation of a skin rash. It is pointed out, that probably frequency of skin eruption among those using luminal more or less frequently and for a long period of time is greater than it is commonly thought to be. Skin eruptions as a toxic action in patients using luminal depends often upon amount of the dose. Memminger's report of collected case of phenobarbital eruption will be read with interest by practitioners who use luminal in practice.

Infections of Central Nervous System.

Busy practitioners, who seek to attain an intellectual grasp of the many special fields in medicine, naturally hail with interest, the publication of a thoughtful review of an important subject by an outstanding man. It is with such appreciation, that one may turn to the special article by Simon Flexner entitled "Obvious and Obscure Infcetions of Central Nervous System."* In this thesis one finds much "meat", dealing with neurologic infections in the light of knowledge acquired by investigators during the past twenty-five years. Here one notes the history and the progress in knowledge of the epidemic meningitis, poliomyelitis, and epidemic encephalitis, with cogent comments upon the worldwide influenza of 1917-1918 and 1922-1923 in connection with neurologic infections. Every practitioner may, with profit to himself, carefully peruse this notable contribution and rest thoughtful attention on it as presenting the more important facts of these grave maladies of neurologic medicine. Epidemic meningitis, the essayist states, is an obvious infection; the direct effect of the micro-organism, the meningococcus, implanted on the membranes about in the brain and spinal cord. Discovered in 1887, it is now known, as result of much controversy and study, that meningitis is a man borne infection. Meningococcus may live on the nasal mucous membrane, although the organisms may not always possess the same biologic characteristics. From studies of the nature and effects of the organism the anti-meningococcus serum was developed. The employment of this serum in proper manner has resulted in profoundly beneficial action, whereas in anti-anti-meningococcus serum days the mortality of epidemic meningitis was from 65 to 90 per cent, now it is 25 per cent or less.

Poliomyelitis was proven to be of infectious nature only in 1907. This discovery was made by Landsteiner in the transmission of the human disease to the monkey. The elusive etiologic organism has as yet successfully hidden its identity; the invisible agent evades present day microscopy. But the monkey-made virus has transplanted the disease from animal to animal. The remarkable feat of discovering the site of the escape of virus from body remains an outsanding victory in efforts to learn of the nature of the infection and its means of transmission. Studies of poliomyelitis have proven that the virus escapes from the infected body exclusively by way of the

*J. A. M. A., Vol. 91, No. 1.

*J. A. M. A., Vol. 91, No. 1—Page 21.

secretions of the naso-pharyngeal mucous membrane. Furthermore it has been shown, that, owing to the rich and intimate lymphatic connection existing between the meninges and the nasal membrane, this channel is most certain in producing the disease: excepting direct inoculations into the brain itself. Thus the mode and channel of infection is discovered, although the organism responsible, remains beyond the present ken of man. The author states that there are strong reasons for placing the cause among living organisms, "in spite of their sub-microscopic size."

Epidemic encephalitis is another twentieth century neurologic disease; although noted, studied and discussed, it remains most obscure both as to antiquity and nature. Its intimate association with the great influenza epidemic gave strength to the suspicion that there was some inter-relation, but a recession of influenza in epidemic form has not wiped out encephalitis lethargica; it still prevails.

Flexner states that clinically it is more complex than either meningitis or poliomyelitis. This is evidenced by the train of symptoms which result in wide variations according to different parts of the brain affected. Its association with Parkinsonian symptoms, lethargic signs, muscular irritability and activity, as well as paralysis, make for a mixture of symptoms difficult to harmonize. The cause of epidemic encephalitis is unknown, but the recital of the efforts to discover it and the treatment of our present knowledge of it makes an interesting subject for careful perusal as one follows Flexner's article to its conclusion.

Clinics at the Danville Meeting.

It is hoped that members will plan to attend the clinics on Tuesday of the Danville session of the State Society. The Committee in Danville is making special effort to arrange interesting demonstrations and clinics. The value of inspection and discussion of cases as presented in a clinical manner, is undoubted. Review of the general topic, illustrated by the clinical case, by a leader, and the demonstration of symptoms or methods of treatment, tend to quicken one's knowledge and freshen one's mind on subject presented. Indeed, one can hardly visit a clinic without obtaining some new thought or idea, which will be useful in one way or another in the routine of private work.

News Notes

Successful Applicants Before State Board of Medical Examiners.

The State Board of Medical Examiners, at its meeting in Richmond, June 19-22, 1928, granted certificates to ninty-seven doctors by examination and to ten by reciprocity or commissions, to practice medicine in Virginia.

The following were granted licenses by examination:

Dr. A. Aillaud, Roanoke, Va.
Dr. Thomas H. Anderson, Richmond, Va.
Dr. A. L. Baker, Newport News, Va.
Dr. J. W. Baker, Roanoke, Va.
Dr. J. F. Barrett, Richmond, Va.
Dr. C. H. Beach, Richmond, Va.
Dr. C. G. Bennett, Richmond, Va.
Dr. W. R. Bond, Richmond, Va.
Dr. C. R. Bowman, Woodstock, Va.
Dr. A. H. Bracey, Bracey, Va.
Dr. L. H. Bracey, Hazelton, Pa.
Dr. W. O. Brandon, Richmond, Va.
Dr. Rufus Brittain, University, Va.
Dr. C. L. Brothers, Richmond, Va.
Dr. C. T. Burton, University, Va.
Dr. R. L. Claterbaugh, Clifton Forge, Va.
Dr. Garrett Dalton, Richmond, Va.
Dr. W. L. Dix, Richmond, Va.
Dr. H. L. Duncan, Richmond, Va.
Dr. E. H. Earnest, Export, Pa.
Dr. Alton C. Echols, Blackstone, Va.
Dr. L. H. Edmunds, University, Va.
Dr. W. C. Elliott, Winfall, Va.
Dr. L. Farley, Mannboro, Va.
Dr. M. M. Fields, Castlewood, Va.
Dr. W. F. Fitzhugh, Nindes Store, Va.
Dr. A. S. Floyd, Richmond, Va.
Dr. E. D. Floyd, Bridgetown, Va.
Dr. J. W. Frazier, Clifton Forge, Va.
Dr. J. A. Gallant, Richmond, Va.
Dr. J. E. Gardner, Baltimore, Md.
Dr. W. R. Gladdin, Richmond, Va.
Dr. A. F. Golderes, Richmond, Va.
Dr. H. B. Haag, Richmond, Va.
Dr. E. J. J. Haboush, Richmond, Va.
Dr. W. H. Hale, Roanoke, Va.
Dr. S. O. Handy, Stuart, Va.
Dr. O. F. Hedley, Richmond, Va.
Dr. C. R. Henderson, Keysville, Va.
Dr. George Hess, Hampton, Va.
Dr. H. B. Hicks, Richmond, Va.
Dr. E. B. Holmes, University, Va.
Dr. H. B. Holsinger, University, Va.

Dr. J. J. Hornisher, Richmond, Va.
Dr. A. P. Hudgins, Jeffersonton, Va.
Dr. T. B. Hunter, Richmond, Va.
Dr. W. C. Jackson, Amelia, Va.
Dr. N. B. Jeter, Belona, Va.
Dr. W. H. Johnson, Richmond, Va.
Dr. E. C. Joyner, Suffolk, Va.
Dr. V. L. Kelly, Jr., University, Va.
Dr. F. Y. Ketner, Richmond, Va.
Dr. E. E. Lovas, Richmond, Va.
Dr. D. F. Love, Sydnorsville, Va.
Dr. James W. Love, Richmond, Va.
Dr. F. K. Lucas, University, Va.
Dr. A. L. Martin, Jr., Richmond, Va.
Dr. Geo. McDonald, Kansas City, Mo.
Dr. Paul McFarlane, Scottsville, Va.
Dr. J. B. McKee, University, Va.
Dr. R. T. McLaurin, Richmond, Va.
Dr. V. J. Meads, University, Va.
Dr. L. Morris, Tuskegee, Ala.
Dr. E. F. Neal, Richmond, Va.
Dr. C. L. Neale, Saluda, Va.
Dr. John M. Nokes, University, Va.
Dr. C. R. Nuckolls, University, Va.
Dr. Peter Paganok, Richmond, Va.
Dr. W. H. Perry, Jr., Cambridge, Mass.
Dr. B. F. Phillips, Richmond, Va.
Dr. D. S. Phlegar, Jr., University, Va.
Dr. F. C. Pinkerton, University, Va.
Dr. J. A. Proffitt, Richmond, Va.
Dr. V. L. Puig, Jr., University, Va.
Dr. J. H. Reed, Jr., Richmond, Va.
Dr. R. H. Reitzel, Richmond, Va.
Dr. E. L. Shamblen, Richmond, Va.
Dr. R. F. Simms, Richmond, Va.
Dr. R. W. Southerland, Richmond, Va.
Dr. W. R. Southward, Jr., Richmond, Va.
Dr. James O. Soyars, Abingdon, Va.
Dr. J. R. St. George, Portsmouth, Va.
Dr. C. B. Stringfellow, University, Va.
Dr. F. E. Tappan, Berryville, Va.
Dr. F. M. Teeple, Richmond, Va.
Dr. W. M. Thompson, Stuart, Va.
Dr. John R. Tucker, Richmond, Va.
Dr. D. D. Vance, Bristol, Tenn.
Dr. E. R. Ware, Orange, Va.
Dr. T. L. Waring, Roanoke, Va.
Dr. C. E. Watson, University, Va.
Dr. Reid White, Jr., Philadelphia, Pa.
Dr. J. P. Williams, Richlands, Va.
Dr. G. H. Wolfe, Abingdon, Va.
Dr. J. R. Wood, Dumbarton, Va.
Dr. L. S. Wornal, Princeton, W. Va.
Dr. H. B. Yeatts, Richmond, Va.

Those granted certificates by reciprocity or commissions are:

Dr. L. P. Burke, Lee Hall, Va.
Dr. H. L. Denoon, Jr., Brookline, Mass.
Dr. Otto F. Geck, Buffalo, N. Y.
Dr. J. H. C. Kimbrough, University, Va.
Dr. Thomas L. Lacy, Moyock, N. C.
Dr. B. W. Leonard, New Haven, Conn.
Dr. A. P. Morton, Bluefield, Va.
Dr. W. S. Savoy, Washington, Va.
Dr. F. L. Smith, Durham, N. C.
Dr. Grover C. Wilson, Quantico, Va.

Make Your Plans to Attend the Danville Meeting.

Danville doctors are busy during this hot weather preparing for the pleasure and comfort of members of the Medical Society of Virginia which is to meet as guests of the Pittsylvania County and Danville doctors, October 16, 17 and 18. This is to be an unusually fine meeting and a large attendance is expected. An innovation is being introduced this year in the form of clinics which will be held on Tuesday afternoon from 2:30 to 6 P. M., so that the early comers may have entertainment prior to the general meeting that evening. This should be an inducement for a large number to "come early and stay late." Clinics will be conducted by Dr. Seale Harris, of Birmingham, Ala., Dr. Thomas Wheeldon, of Richmond, Dr. Lawrence T. Royster, of University of Virginia, and Dr. E. C. Harper, of the State Board of Health. In addition to the clinics, there will be scientific and commercial exhibits, papers by members and invited guests, golf and other social features.

Hotels are giving the following rates:

Danville Hotel
Single rooms—$2.00 to $3.00 a day.
Double rooms—$4.50 to $7.00 a day.

Burton Hotel
Single rooms—$1.75 to $3.00 a day.
Double rooms—$3.00 to $5.50 a day.

Leland Hotel
Single rooms—$1.50 to $3.00 a day.
Double rooms—$2.50 to $4.00 a day.

It is suggested that members should make reservations in advance, by writing the hotels or to Dr. P. W. Miles, chairman in charge of hotels.

Hotel Danville is headquarters for the meeting. The House of Delegates will meet in the ball room of this hotel and the scientific exhibits will be in the balcony on the same floor. The regular scientific sessions will be held in

the auditorium of the Elks' Club, two doors from the hotel, and the commercial exhibits will be in the lobby of the Elks' Club.

The House of Delegates will have its first meeting on Tuesday afternoon and all component societies are urged to send their quota of delegates as many matters of importance are to be discussed at this meeting.

Be sure to bring your wives and daughters as the Woman's Auxiliary will look out for them.

Re-Appointed State Health Commissioner.

Governor Byrd early in July re-appointed Dr. Ennion G. Williams as State Health Commissioner for another term of four years. Dr. Williams has just completed twenty years' service in this position.

Married.

Dr. Blanton P. Seward, recently of Richmond but now of Roanoke, Va., and Miss Margaret Barker, Richmond, in late June.

Dr. Lee Gordon Hastings, of the class of '26, Medical College of Virginia, formerly of Emporia, Va., and Miss Agatha Dodson, Minden, La., June 23. They will be located temporarily at Eldorado, Ark.

Dr. C. W. Trexler, San Diego, Calif., of the class of '26, University of Virginia, and Miss Eva Rose Cuneo, of San Francisco, Calif., June 29th. Immediately following their marriage they left for Kealia, Kanai, Hawaii, where Dr. Trexler had accepted the position as director of the Samuel Mahelona Memorial Hospital.

Dr. Clarence P. Obenschain,

Recently of New Hope, Va., has moved to Staunton, Va., where he is engaged in general practice.

The Southwestern Virginia Medical Society

Will hold its next semi-annual meeting in Wytheville, September the 27th and 28th, under the presidency of Dr. J. L. Early, of Radford. There will be a symposium on head injuries, and papers by a number of members in addition to those by invited guests, Dr. Robert H. Ivy, of Philadelphia, and Dr. William T. Graham, of Richmond. Wytheville is centrally located for this society and, having a splendid new hotel, a large attendance is expected. Dr. E. M. Chitwood is chairman of the local committee of arrangments; Dr. E. G. Gill, Roanoke, is secretary of the society.

Hospital Centennial Held.

On July the 24th, the Western State Hospital celebrated its centennial on which occasion there were nearly two hundred guests for the luncheon and exercises following. Dr. J. S. DeJarnette, for many years superintendent of this institution, reviewed its history from the admission of the first patient in 1828. There were several other speakers all of whom paid tribute to the splendid work which has been done by Dr. DeJarnette.

Virginia Doctors at Summer Training Camp.

The following Virginia doctors returned July the 21st from Carlisle Barracks, Pa., where they attended the summer training camp for reserve officers: Dr. Burton O. Clark, National Soldiers Home, Hampton; Dr. Thos. F. Dodd, Alexandria, R. F. D. 3; Dr. Charles M. Edwards, Richmond; Dr. Walter C. Elliott, Winfall; Dr. William Engler, Norfolk; Dr. Gerald A. Ezekiel, Richmond; Dr. Charles H. Henderson, Keysville; Dr. George A. C. Jennings, Richmond; Dr. George A. L. Kolmer, Salem; Dr. Frederick U. Metcalf, Roanoke; Dr. Clarence P. Obenschain, Staunton; Dr. Thos. N. Spessard, Richmond; Dr. Pitt E. Tucker, Buckingham; and Dr. William Robt. Weisiger, Richmond.

Mary Washington Hospital,

Fredericksburg, Va., has been completed and can now accommodate sixty patients. It is on the site of the old hospital and during its construction, patients have been housed in an annex of the old Maury Hotel. The building is brick, two stories in height, and is modern in all its equipment.

Kentucky and Mississippi Pass Mothers' Aid Laws.

Kentucky and Mississippi have been added to the list of States which make legal provision for aid to mothers with dependent children, so that the children may be cared for at home. Neither state provides a state fund for the purpose. In Kentucky the counties are authorized to make the necessary allowances. In Mississippi the "children's aid fund" for each county is to be set aside by the county board of supervisors from the tax collected to support the poor or out of the county general fund.

The only States now without mothers' aid legislation are Alabama, Georgia, New Mexico, and South Carolina. It is estimated that approximately 200,000 children in the United States are now receiving public aid in their own homes.

Dr. Blanton P. Seward,

Who has been practicing in Richmond, Va., for several years, has accepted a position in the medical department at Lewis Gale Hospital., Roanoke. Va., and entered upon his new work on July the 1st.

The American Laryngological Association,

At its annual meeting held recently in Washington, D. C., elected Dr. Charles W. Richardson, of that city, president, and Dr. George M. Coates, Philadelphia, secretary.

Elementary Training for Doctors' Helpers.

The University of Virginia held its fourth Institute for Doctors' Helpers July 30 to August 3, inclusive. This Institute, as well as one given for colored women at the Virginia Normal and Industrial School at Petersburg from August 6 to August 10, inclusive, was conducted by trained lecturers from the State Department of Health.

The purpose of these courses is to teach women such elementary principles of nursing as may qualify them to act as bedside helpers when trained nurses are neither available nor absolutely necessary. The courses are designed so they may be particularly helpful in training women to act in confinement cases, and it is hoped that many of these trained women may eventually supplant many of the ignorant midwives upon whom so many of the rural women have to depend at childbirth.

Junior Safety Patrols Save Children.

During 1927 traffic accidents in Baltimore caused 169 deaths; of these, 56 were of child pedestrians. In school neighborhoods where junior safety councils or patrols were functioning the number of accidents was very small in comparison with other sections. In the hope of reducing the hazards to school children, the Baltimore Safety Council has obtained the consent of the school authorities to organize a safety council or patrol in every school of the city. It also sponsors every May two junior safety council conventions, one for white and one for colored children, the object of which is to stimulate interest in the public playgrounds and direct their use during the summer vacation. They are attended by approximately 3,500 children.

Dr. Francis W. Upshur,

Richmond, Va., announces the removal of his offices from 1209 to 805 West Franklin Street, this city.

Doctor Fined for Failure to Comply With Statute.

A prominent physician of Charlottesville has been fined $25 for failing to put nitrate of silver drops in the eyes of an infant whose birth he recently attended according to report from the State Board of Health. The child subsequently had a dangerous eye infection which experts testified could have been averted if the drops had been used according to the Virginia law. Fortunately blindness was prevented by the skill of practitioners at the University hospital.

Inquiry discloses that companies which insure doctors against suits for negligence or malpractice do not include among the insurable causes any actions which result from failure to obey a statute. This policy on the part of the insurance companies makes it, therefore, extremely dangerous for doctors to disregard the law.

Wisconsin's Double and Triple Compensation Law.

In Wisconsin employers are required to pay double or triple compensation to children injured while illegally employed, according to the nature of the violation of the law involved. In 1927 extra compensation payments ranged from less than $20 to nearly $5,800, and the aggregate amount of such compensation under claim cases settled during the year was more than $16,000.

Appointed Mental Hygiene Commissioner.

Dr. George H. Preston, Baltimore, has just been appointed by Governor Ritchie as commissioner of hygiene of Maryland to succeed the late Dr. Arthur P. Herring. Dr. Preston is a graduate of Johns Hopkins University School of Medicine, and was for three years connected with the Children's Clinic in Richmond, Va. He left Richmond the first of this year, to become executive secretary of the Mental Hygiene Society of Maryland.

Dr. Holcombe McG. Robertson,

Of the U. S. Public Health Service and for a number of years a member of the Medical Society of Virginia, has been detailed for duty overseas as examiner of immigrants. His address is care the American Consulate, Glasgow, Scotland.

Dr. John L. Thornton.

Warrenton, Va., is home again after several weeks spent at the University of Virginia Hospital, where he was under treatment.

Work of the Massachusetts S. P. C. C., 1927.

In 1927 the Massachusetts Society for the Prevention of Cruelty to Children received nearly 12,000 children under its care—11 per cent more than in 1926. The society attributes this larger number rather to an increased use of its help by the public than to an increase in child abuse and neglect. About 4 out of 5 of the family problems presented last year were adjusted without legal action, so that only 1 in 5 of the 12,000 children was brought directly under the jurisdiction of a court. It was found necessary to remove only 1 child in 25 permanently from parental control.

Dr. William L. Gannaway,

Recently of Abingdon, Va., announces that he has located at Kingsport, Tenn.

Awarded Gold Medal for Work on Tularaemia.

Dr. Edward Francis, United States Public Health Service, was presented a gold medal at the recent meeting of the American Medical Association. Research work on Tularaemia, a new disease of man, was considered by the committee as the most important medical work of the year, and Dr. Francis the leading authority.

Tularaemia, an epizootic of wild rabbits, is caused by Bacterium tularense. Cooks, hunters, housewives and market men suffer mostly. Discovered in Tulare County, Calif., the disease spread over forty-two states, the exceptions being the New England group. Dr. Francis, himself, was taken down with it.

The Interstate Post-Graduate Medical Association of North America

Will meet in Atlanta, Ga., October 15-19, under the presidency of Dr. Lewellys F. Barker, of Baltimore. Eighty-two renowned clinicians and teachers from all sections of the United States and Canada, and from several European countries have accepted places on the program. Dr. George W. Crile, Cleveland, Ohio, is chairman of the program committee, and Dr. William B. Peck, of Freeport, Ill., managing director. Dr. John B. Deaver, Philadelphia, is president-elect of the Association.

All medical men in good standing are privileged to register and are cordially invited to attend. A registration fee of $5.00 is charged.

Dr. E. Chambers Laird,

Boydton, Va., is medical director at Buffalo Lithia Springs, Va., for the summer months. He will return to his home about the middle of September.

Dr. J. Conway Hiden,

An alumnus of the University of Virginia, Department of Medicine, recently of Burdine, Kentucky, is now located at Pungoteague, Va., his former home.

Dr. Gladys Smithwick,

Recently at the American Hospital, Chicago, Ill., is now at Oakdale, Iowa. Dr. Smithwick is an alumnus of the Medical College of Virginia.

Health and Child Welfare Work in Cuba.

As a part of Cuba's official anti-tuberculosis campaign $3,000,000 has been appropriated for the construction of tuberculosis sanitariums. Preventoriums for children whose poor physical condition predisposes them to the disease will also be established. Plans have been made for the compulsory reporting of cases by physicians, the extension of the visiting-nurse system, the keeping of accurate statistics of cases, and the education of the public through motion pictures, lectures and literature.

Cuba is planning also for a National child-welfare congress, to be held next December, to continue for Cuba the work of the Pan-American Child Congress held in Habana last December. The committee in charge is under the chairmanship of the Secretary of Health. The five sections proposed are hygiene, medicine, psychology and education, sociology and legislation, and care for defective and delinquent children.

American Proctologic Society.

At the meeting of this society in Rochester and Minneapolis, Minn., recently, Dr. Edward G. Martin, of Detroit, Mich., was elected president, and Dr. Walter A. Fansler, Minneapolis, secretary.

Going Abroad to Study.

Drs. George A. Noland, of Ashburn, Va., and W. O. Bailey, of Leesburg, Va., will sail on the "President Harding", October the 3rd, for a visit to clinics in Berlin, Vienna, and Budapest. While abroad, Dr. Noland will take up post-graduate work in diseases of children and internal medicine, and Dr. Bailey will devote his time to the study of the eye.

A Survey of Minnesota's Crippled Children.

A state-wide survey to locate all the crippled children in Minnesota is being planned by the Minnesota Association for Crippled Children. Since 1916 there have been three

epidemics of infantile paralysis in the State, each affecting from 700 to 900 children and leaving many cripples. A Minnesota law provides State aid to the extent of $250 annually for the education of each crippled child discharged from the hospitals but unable to attend the regular schools. The Michael Dowling School in Minneapolis, operating under this law, receives more than 100 pupils from Hennepin County; it is equipped with special apparatus for treatment of cripples, and the same educational training is given as that provided for physically normal children.

Dr. H. H. Young Honored.

Dr. Hugh Hampton Young, of Johns Hopkins University, Baltimore, on the first of August was made an honorary fellow of the Royal College of Surgeons of Ireland. Dr. Young sailed the latter part of June for a visit to Europe and to attend this ceremony. He is an alumnus of the University of Virginia and has many friends in this State.

Dr. Everett S. Barr,

An alumnus of the Medical College of Virginia and for the past few years medical director of the Philadelphia Hospital for Mental Diseases, an institution of over 4,000 beds, has tendered his resignation to accept the position as executive physician of the University of Pennsylvania Graduate School of Medicine, and will be in executive charge over the clinical work of the hospital after September 1st.

New Recreation Pier for Brooklyn.

Remembrance Pier, a new recreation pier named in honor of Gold Star mothers, has recently been opened by Brooklyn. Its deck, 600 by 55 feet, is completely fenced, and one-third of the length is roofed. There will be playground equipment and a director of play, and music and dancing in the evening.

Increase in Divorce Since 1887.

The U. S. Bureau of the Census reports that the divorce rate per 1,000 of the population in 1926 was three times as great as it was in 1887, the year when the census began to compile records on the subject. Minor children were reported in more than one-third of the 1926 divorce cases, the total number affected being 116,378. The increase in the number of divorces for every 100 marriages during the same period was from 5.5 in 1887 to 15 in 1926.

Dr. George F. Simpson,

Purcellville, Va., has just been elected first vice-president of the Loudoun Hospital, at Leesburg, Va.

Members of Committees.

Drs. R. H. Woolling and D. S. Divers, Pulaski, Va., have been elected members of the tournament and membership committees, respectively, of the Pulaski Country Club.

A Few Summer Vacationists.

In addition to the large number of doctors all over the State who have been taking week end vacations, and going on short trips made possible by the improved roads and automobiles, the following are noted as having been on special trips:

Dr. George A. Torrence, of Hot Springs, Va., sailed July 27th for a tour of observation of the German spas and health resorts. He will return September the 15th.

Dr. and Mrs. A. L. Tynes returned to their home in Staunton, Va., early in July, after a visit in Cambridge and Boston, Mass., and in New York. Dr. Tynes attended a number of clinics in these cities.

Dr. Thelma F. Brumfield, University, Va., has been spending some time in New York City. She will return about the middle of August.

Dr. and Mrs. Chas. B. Fox and children, of Monterey, Va., spent a vacation of a month in Albemarle County, Va., the doctor's native home.

Dr. and Mrs. Beverley F. Eckles, Richmond, spent their vacation in Atlantic City.

Dr. and Mrs. J. Allison Hodges, Richmond, left early in August for a visit at their summer home, "Drowsy Waters," Montreat, N. C.

Dr. and Mrs. J. Weldon Smith, Farmville, Va., are home again after a visit to Virginia Beach.

Dr. Reid White and daughter returned to their home in Lexington, Va., the middle of July, after visiting at Cape May, N. J.

Dr. and Mrs. Andrew D. Parson and daughter, Alice Frances, of Raven, Va., returned home the middle of July from a motor trip in Virginia, Kentucky and West Virginia.

Dr. and Mrs. J. E. Wine and son of Harrisonburg, Va., are home again after a visit to relatives at Wrightsville Beach and Wilmington, N. C.

Dr. and Mrs. F. D. Willis, of Newport News, Va., took a motor trip to Lancaster County, Va., where they visited friends.

Dr. and Mrs. Robert Whitehead, Richmond, Va., were recent visitors in Amherst, Va.

Dr. and Mrs. Kenneth Bradford, Staunton, Va., spent sometime the latter part of July at the new Monterey, Va., hotel.

Dr. and Mrs. Thomas F. Gill and sons have returned to their home in Richmond, after a visit to Colonial Beach, Va.

Dr. and Mrs. D. Lane Elder and young children of Hopewell, Va., have been visiting Mrs. Elder's mother at Bassetts, Va.

Dr. and Mrs. Thos. S. Richardson returned to their home in Waynesboro, Va., early in July, after a visit to relatives in Toronto, Canada.

Dr. B. B. Bagby, formerly with the Richmond City health department, but now health officer of Athens and Clarke County, Ga., has been visiting friends in Richmond and West Point, Va.

Dr. Charles H. Peterson returned to his home at University, Va., early in July, after a motor trip through the North and a visit to his former home at Monterey, Va.

Dr. Beverley R. Tucker and family, Richmond, Va., are spending some time at Mountain Lake, Va.

Dr. St. Geo. T. Grinnan and daughter, Richmond, are also at Mountain Lake.

New Facilities for the Study of Children's Diseases.

The Babies Hospital of the City of New York is soon to become a part of the Medical Center, where it will assume the responsibility for medical work for all the child patients. It is expected that the new building will be completed by February, 1929, with beds for 30 private and 160 ward and semi-private patients.

Yale University has recently received a gift of $1,000,000 to be known as the Raleigh Fitkin Memorial Fund, which is to be used for the study of children's diseases and child life. A suitable building is to be erected, and the remainder of the money will be set aside as a permanent endowment fund.

Fire at Hospital.

The administration building of the Central Tennessee State Hospital for Insane, eight miles from Nashville, was totally destroyed by fire in the early morning of July the 27th. None of the 1,272 patients was hurt but several strayed off when turned out of the buildings into the spacious grounds.

Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Va.

The annual report of this hospital, of which Dr. E. G. Gill is Chief of Staff, shows that from July 1, 1927 to July 1, 1928, there were 578 operative admissions, and 11,131 examinations and treatments by members of the staff.

This hospital, a modern and strictly fireproof structure, is designed and equipped for the medical and surgical treatment of diseases of the head, and of the air and food passages, as well as of the eye, ear, nose and throat. Resident physician lives in the hospital, and only graduate nurses are employed. Plans are being formulated for the erection of an additional floor to the present building. This is made necessary by the increase in the volume of work.

A Post-Graduate Clinic was held from March 19th to 24th, at which twelve prominent specialists in these branches delivered lectures and demonstrated operations to twenty-one attending physicians.

The American Electrotherapeutic Association

Will hold its annual meeting at Hotel Statler, Boston, September 10-14, under the presidency of Dr. Charles F. Stokes, of New York City. Information about this meeting may be obtained from the secretary, Dr. Richard Kovacs, 223 East Sixty-eighth Street, New York, N. Y.

Remington Medal Award.

Prof. Charles H. LaWall, Dean of the Philadelphia College of Pharmacy and Science, was awarded the Remington Medal for 1928 on the merits of his book "Four Thousand Years of Pharmacy." This award is granted by a jury of the living ex-presidents of the American Pharmaceutical Association, seventeen in number.

The American Roentgen Ray Society

Is to hold its annual meeting in Kansas City, Mo., September 25-28, and an elaborate program is being arranged for this occasion. Dr. A. H. Pirie, Montreal, Canada, is president, and Dr. John T. Murphy, Toledo, Ohio, secretary.

Tokyo Studies the Motion-Picture Problem.

A recent questioning of more than 16,000 school children in Tokyo as to their favorite motion-picture subjects showed that love affairs and fights are most popular. The municipality has now arranged with the motion-picture houses to put on pictures especially appropriate for children at one performance a week. The Ministry of Education is planning to establish a film library to serve as a

distributing center of instructive and interesting films for children, and to rent the films to primary schools at cost. The Government has already endorsed 260 films as adapted to the use of educational organizations and schools.

Dr. A. L. Wilson,

Lynchburg, Va., has been elected a member of the executive committee of the Lynchburg Post, No. 16, of the American Legion, for the coming year.

Dr. Harry Hudnall Ware,

Of the class of '24, Medical College of Virginia, has returned to Richmond, and is now associated with the department of obstetrics at tSuart Circle Hospital, this city, and will limit his practice to that branch. Since leaving Richmond, Dr. Ware has interned at the New York Lying-In and Jersey City Hospitals.

Dr. E. J. Nixon,

Petersburg, Va., has been elected president of the Petersburg Post of the American Legion, for the ensuing year.

Southern Medical Association.

Asheville, N. C., doctors are arranging for the meeting of the Southern Medical Association in their city, November 12-15, and count on a large attendance. Apart from the interest in the meeting, the beauty of Asheville and the surrounding country is such that those who have not visited that country should take advantage of this occasion to see this beauty spot of America. Dr. William R. Bathurst, Little Rock, Ark. is president. Mr. C. P. Loranz, secretary-manager of the Association, Birmingham, Ala., will gladly send folder about the meeting to any one applying for same.

Dr. A. M. Showalter

Has been elected president of the Rotary Club of Cambria, Va., for the current year.

"Acres for Classrooms".

The unique experiment of having each child assigned an acre of the home farm for cultivation is being tried by the Penn School, which works among the agricultural Negroes of St. Helena Island, off the South Carolina coast. Most of the parents have given willing cooperation. Records of progress are kept at the school and prizes are offered for the best crops and the best progress from year to year.

Dr. Joseph T. McCastor,

Of the class of '27, Medical College of Virginia, after several weeks in New York City, has located at Thomas, W. Va., where he is associated with Dr. Joseph L. Miller.

Civil Service Examinations.

The U. S. Civil Service Commission announces the following competitive examinations, applications to be on file with the Commission in Washington, D. C., by dates named:

For cytologist and for senior toxicologist, not later than September 5;

For physiotherapy aide and physiotherapy pupil aide, not later than August 21, October 9, and November 27;

For graduate nurse, graduate nurse (visiting duty), and graduate nurse (junior grade); for dietitian and student dietitian; for junior medical officer (interne); and for senior medical officer, medical officer, associate medical officer, and assistant medical officer, applications for all of which must be on file with the Commission not later than December 29, 1928.

Dr. H. J. Langston,

Danville, Va., is now in Buffalo, N. Y., where he is taking up special work in obstetrics under Dr. Irving W. Potter. Mrs. Langston accompanied her husband to Buffalo.

Dr. R. L. Page,

Batesville, Va., was presented a watch on August the 1st, by the King Solomon's Lodge, No. 194, A. F. and A. M.

Birth Certificates for Young Workers.

Alabama, since October, 1927, has required that an effort be made to obtain birth certificates before issuing work certificates to children between 14 and 16. Birth certificates were found for less than half the applicants during a three-month period. Among those for whom birth certificates were found none proved to be older than the age claimed, but almost a fourth of them were younger.

Maternal Mortality Decrease in Rural New York.

In rural New York there was a decrease of 26 per cent in the maternal mortality rate for the period 1921-1925 from the rate for 1915-1920. This decrease is considered as possibly due to the increased use of hospitals for confinement purposes by rural mothers.

The Families of Kentucky's Prisoners.

The unfortunate conditions recently found by the United States Children's Bureau in many of the families of 210 male prisoners of Kentucky indicate the need of a prison labor system giving employment to all able-bodied inmates at a reasonable wage, and of compul-

sory regular contributions to their families of a portion of their earnings. Organization of county child-welfare work and "mothers' pensions" were also shown to be needed. A law authorizing such pensions was passed early in 1928 by the State legislature.

For Sale—

The following equipment of the late Dr. E. H. Heaton: Large Fisher cabinet—latest type machine—and galvanic battery outfit. Everything in perfect condition, having been used only one year. Will sell for half price. Address Mrs. E. H. Heaton, Leesburg, Va. (Adv.)

Obituary Record

Dr. Julian R. Beckwith,

Petersburg, Va., died at his country home in Prince George County, July the 28th, after having been in bad health for several months. Dr. Beckwith was 55 years of age and had graduated in medicine at the University of Virginia in 1899. Shortly thereafter he located in Petersburg and had been actively engaged in practice there until his last illness. He was a member of his local and the State Medical Society. His wife and five children survive him.

Dr. Louis Leake Putney,

For ten years a member of the staff of the Western State Hospital, Staunton, Va., committed suicide by hanging himself from a rafter in the basement of his home, July the 26th. Although in apparently good spirits, it is stated that he had been somewhat depressed over his health recently. Dr. Putney was a native of Prince Edward County, Virginia, and thirty-eight years of age. He studied medicine at the Medical College of Virginia, from which he graduated in 1914. He had been a member of the Medical Society of Virginia for a number of years. His wife and a brother, Dr. Charles W. Putney, of Staunton, survive him.

Dr. Clarence C. Jones,

Staunton, Va., died in that city, July the 10th, at the age of fifty-three years. He had been in bad health for some time. He obtained his diploma in medicine from the Baltimore Medical College in 1903 and had practiced most of the time since in Staunton. He had been for some years a member of the Medical Society of Virginia. His wife and three children survive him.

Dr. Hunter McGuire Brumback

Died July the 27th, at his home near Boyce, Va., after an illness of several weeks. He was a son of the late Dr. I. M. Brumback and was fifty-three years of age. Dr. Brumback studied medicine at the former University College of Medicine, Richmond, from which he graduated in 1900. He had been a member of the Medical Society of Virginia for a number of years. His wife and three children survive him.

Dr. Presley Marion Rixey,

Rear admiral in the U. S. Navy, retired, died at his home Rosslyn, Va., June 17th, aged seventy-five years. Death was due to myocarditis. He was graduated in medicine from the University of Viirginia in 1873 and entered the navy as an assistant surgeon the following year.

Dr. Duff Green Lewis,

Washington, D. C., died at Garfield Hospital, that city, June the 17th, aged fifty-eight years. He was a native of Virginia and graduated in medicine from the University of Virginia in 1891. He was formerly clinical associate in surgery at the George Washington University Medical School, Washington.

Resolutions on Death of Dr. F. W. Lewis.

The following resolutions were adopted by the Northern Neck Medical Society, at a recent meeting, on the death of Dr. Frank Waring Lewis:

WHEREAS, Our Heavenly Father has seen fit to call our dear friend and close companion, Dr. Frank Waring Lewis, to his final reward, it seems meet and proper that we who knew and loved him best should give expression to our sorrow.

THEREFORE, BE IT RESOLVED, That we, the members of the Northern Neck Medical Society have sustained a personal loss, the Society one of its charter members and a former president who showed unfailing courtesy and kindness as a presiding officer.

As a companion, he was genial, warm-hearted and lovable, firm in his stand for the things he thought to be right, a beloved physician, skilled in his profession and loyal to its members. In his death the County of Lancaster and State of Virginia have lost a good and useful citizen; the medical profession a physician of the highest type, and his family a loving father and a tender and affectionate husband.

RESOLVED FURTHER, That a copy of these resolutions be spread upon our minutes, published in the VIRGINIA MEDICAL MONTHLY and the local papers, and a copy be sent the family.

B. A. MIDDLETON,
M. C. OLDHAM,
C. T. PEIRCE.
Committee.

Virginia Medical Monthly

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RICHMOND, VA., SEPTEMBER, 1928

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$2.00 A YEAR

THE ATTITUDE OF THE PUBLIC TOWARDS THE MEDICAL PROFESSION.*

By SOUTHGATE LEIGH, M. D., F. A. C. S., Norfolk, Va.

It is my desire to present for your consideration a few simple thoughts bearing on this very important and vital subject. With your kind permission I shall speak plainly and to the point.

There are many things that the public does not understand and does not realize in its dealings with the regular medical profession. Some of these misunderstandings are no doubt the fault of the doctors themselves, while many are due to a lack of information as to the true status of the medical profession.

The people of Virginia are the best people on earth, and I know them well enough to feel that they would be glad to have all such doubts promptly cleared away. I do not hesitate, therefore, to lay the matter plainly before you, believing that you will understand that my motives are of the best, and that I am simply trying to do my little for the public good.

But few people fully realize the hardships of a doctor's life. He is at the "beck and call" of everybody, high and low, rich and poor. He is expected to be always on call, day and night, and must respond regardless of time or weather. His time is never his own, and does not belong even to his family. It is impossible for him to make positive engagements, because so often they are necessarily broken as duty calls. He cannot properly look after his own physical welfare because of his irregular hours and the uncertain demands upon him, and only too frequently his family is neglected. This picture is not overdrawn but, on the contrary, the reverse is true.

You might very properly ask, then, why does a man go into medicine, or why does he continue? Why is he willing thus literally to give his life for the people?

The answer is simple. It is because of his intense love for the work. Because of the wonderful satisfaction that comes to him from being able to relieve human suffering and prolong human life. And that is practically the only reward, in this world at least, that is his.

You would think that one who thus literally gives his life to the public should at least be appreciated and should certainly be rewarded in worldly goods. The fact is, however, that it is a very rare thing for a doctor to accumulate anything from his professional work, and a very large proportion of doctors really do not receive enough to furnish a comfortable living for themselves and their families.

I have in mind a country doctor who labored faithfully and earnestly among his people for a quarter of a century, never sparing himself, going day and night without proper rest or proper care of himself. I was especially struck by the fact that he could not be persuaded to leave his practice even for a day, for fear that one of his patients might suffer at his absence. When this faithful servant of the people passed to the Great Beyond, he left nothing for his family except a partly mortgaged frame dwelling, his home.

To my mind, that was a tragedy; a tragedy due to a lack of realization on the part of his clientele. And such sad occurrences are taking place all over this State. I cannot believe that our good people would allow such a situation to go on if they did but realize the true facts. *A doctor should be the first, and not the last, to be paid.*

Regardless of his own personal affairs, a doctor cannot refuse a call to an ill patient, pay or no pay. He has to rely on the honesty and fairness of the people to recompense him. But the facts are that the recompense is usually not forthcoming. Our good people are greatly in need of education along these lines.

*Read by request before the Southwestern Virginia Medical Society at a public meeting, at Marion, Va., March, 29, 1928.

One of the main reasons for the scarcity of doctors in the rural districts is that they cannot collect a decent living. The result is that in many places the people are suffering for medical attention. The older doctors are gradually passing away and the younger ones are fearful of the rural sections.

In some States, a new and most successful plan has been adopted in certain country districts, badly in need of doctors. The substantial people of each such section get together and guarantee the doctor a certain amount annually. From reports coming to the American Medical Association, in no instance have the guarantors been obliged to make up a deficit. They have evidently persuaded the people to promptly settle the doctors' bills.

The educational part of a doctor's life is not properly understood by the public. The cost of a medical education is unreasonably high and the time consumed so great that the average age of the doctor beginning practice in this country is between 26 and 28. Even after he is in practice, a conscientious doctor must, in order to do his duty to his patients, be continually adding to his knowledge by reading, by attending medical meetings, and by visiting the important clinics. Instead of the public opposing such work and such enforced trips, they should urge them on their doctors, and co-operate with them fully. Such absences are for the direct benefit of their patients, the public.

The passing of the *old family physician* is pathetic, and brings sadness to the hearts of the older people of the communities. He was the friend and advisor in all things. He wielded a great influence over the people, being their father confessor, and comforter. He felt that the people belonged to him, were like members of his own family, and treated them as such. They loved him, looked up to him, and honored him. With all of this, however, it seems strange that the people thought so little of his necessities, and gave him so little of the things needed for himself and family. He could not force them, he was too close to them and loved them too dearly. The thing which he did best and which was of greatest importance has passed on with him. He studied his patients from birth to maturity and often to old age, their constitutions, habits, peculiarities, and was in a position to give them the best medical attention known in his time.

The *new family physician* can do even better if the people will but cultivate him, and get close to him, as they did to the old one.

This is an age of progress and development in everything.

In medicine, knowledge has increased by leaps and bounds. The science has grown so rapidly and extensively that no one man can handle thoroughly more than a small part. That means specialists in various lines.

With improved knowledge, with modern arrangements and appliances, much more can be done, than formerly, in exact diagnosis, in finding out what is the matter with patients before instituting treatment. Much has been done also in locating the causes of diseased conditions, so that such causes may be removed. The educating of the public in regard to the prevention of disease has greatly cut down the general mortality. The sum total of the efforts of the regular medical profession in these various lines has greatly reduced the amount and severity of sickness and materially prolonged human life.

I feel I am safe in saying that, in the past thirty years, the average life has been extended at least fifteen years. At that rate, the profession is, each year, through its various endeavors, adding to the span of life by six months. *Is not that a wonderful thing?* And the good work still goes on! The public does not fully understand it, or there would be better co-operation with the regular profession.

But to return to the subject of the "new family physician." Each family should have one, and he should be made to understand that he is in full charge of the physical welfare of both old and young. That will give him the splendid opportunity of keeping a *physical life record of each.* Such a record is invaluable, and can be made quickly available by a card index system.

When a member of the family needs a specialist in any line, the *family doctor* is the one to arrange the visit, keep in close touch with the consultant, supplying him with the previous history of the case, and add to the health record the details of the specialist's work.

It is a great mistake for the patient to go to another doctor without the advice and co-

operation of the home physician, upsetting his interest in the case, and completely demoralizing his records.

The strange doctor to whom the patient goes is also placed at a disadvantage, not being familiar with the "health record" and with the previous treatment.

In the matter of consultations, too, the public needs enlightenment. A doctor should not be employed unless the patient has confidence in him and is willing to trust his life and safety to his care. In the event of serious illness, the attending doctor should be made to understand that the responsibility rests solely upon him and, if he needs help, he is the one to call for it and select the consultant. Such a consultation is productive of the most good, while a consultation arranged in any other way is often harmful.

The public does not understand how keenly the conscientious doctor feels the responsibility of a human life being in his hands, and how anxious he is that everything known to science should be available for the patient.

The thoughtless habit that so many have, of going to a neighboring town or city for minor ailments, is also bad and greatly interferes with the systematic work of the family doctor. He should rather be co-operated with to such an extent that he will have a well-equipped office, with the necessary assistance and facilities, and that he may keep regular office hours.

There is no greater need today than for the family physician, especially in the country districts, to be permitted to do satisfactory office work. He has the necessary knowledge, can get the proper assistance and facilities, and is lacking only in the one essential, and that is the co-operation of his patients. A large proportion of ailments can be better handled at the office, and through such office calls the doctor can be saved many hours of unnecessary driving and effort. Through office work, patients may be more thoroughly examined, and many aids in treatment employed that are not available at the homes.

People will become accustomed to the life-prolonging practice of "periodical health examinations", and much serious disease will be discovered in its early and curable stage.

Among the baffling problems which are confronting the profession today is the problem of cancer in women. The public has not yet learned that cancer is nearly always a preventable and curable disease. It is, however, a fact. The difficulty with women is that they will not permit themselves to be properly examined. Modesty and ignorance of the facts hold them back. They do not understand that certain discharges, which a very large proportion of them have, are *abnormal* and *dangerous*, and often are from simple curable conditions which, if not detected and promptly treated, will develop into cancer. They should at once consult their family physician about these and any other signs or symptoms which they do not understand.

With a properly equipped office and a woman assistant, the family doctor, in a decent and refined way, may make the necessary examinations and save many a valuable life from the horrors of cancer. The doctors are ready. All that is needed is the active sympathy and co-operation of the public.

And now we come to the "quack", that "vulture of evil", preying on the superstitions of the helpless and ignorant. If the people knew what the profession knows, no quack would be tolerated in the State of Virginia. In its legislative work against irregulars, the medical profession is acting for the helpless, and those who have not had the opportunity of learning the facts. The profession is simply insisting that every individual permitted to practice on sick people should be properly educated, should have the fundamental knowledge of the essentials of medicine. That is all. Such a demand is only right and proper. The State law requires that a regular doctor of medicine should have at least four years in a high class medical school and pass a rigid examination before a State Board. It naturally follows that *every* person licensed to practice on sick people should also be properly educated.

No one can intelligently care for the sick without sufficient knowledge to enable him to first find out from what the patient is suffering. Without such investigation, treatment is of little avail. Treating a symptom does not cure a disease, and often prevents or hinders a cure. After a diagnosis is made, treatment can properly be instituted and often the cause of the trouble removed.

The Legislature has most wisely made the laws more stringent for the protection of the public. It has especially decreed that harmful advertising should be prohibited. The

public has, through Government agencies and the publications of the A. M. A., learned much in regard to the uselessness and dangers of patent medicines; and yet there is much more to be learned. The same rule applies to such medicines as to treatment without diagnosis. In a large proportion of cases these drugs actually do harm and at times cause danger.

The family physician always instructs his regular patients in regard to the simple remedies which they can safely use. If anything else is needed, it is always best to get his advice.

The Woman's Auxiliary to the American Medical Association, to the State Medical Societies, and to the local medical societies, is doing much in aiding the profession in telling the "true story" of medicine to the people. They are helping to educate the public in regard to preventive medicine in schools, clubs, families and communities; in urging regular health examinations of both men and women *by their family physicians;* in aiding the doctors to improve themselves; to attend regularly local and distant medical meetings; in bringing about a better feeling in the medical profession itself; and in educating the public as to what regular medicine is, contrasted with quackery.

If you have no Woman's Auxiliary in each of your counties, I would say to you, both doctors and people, that you are missing a great aid to your medical work and health development. Other sections of this and other States have such active and productive auxiliaries.

The women have augmented their work greatly through a systematic distribution of the great health magazine, "*Hygeia*", which tells the public in simple, understandable language, what medicine is, and gives much helpful advice to the laity. This magazine should be in every doctor's office, in every library and school, and in the homes of all thoughtful people.

Virginia is much behind its sister States in medical organization. As I attend each year the wonderful meetings of the American Medical Association, to which I have been a delegate from the Medical Society of Virginia for the last ten years, I am continually impressed with the great good that thorough organization of the doctors of the States is doing for both the profession and the public.

In Virginia we have a number of strong local societies, taking proper care of all medical activities, co-operating closely with the State Board of Health, and looking after the indigent and helpless. To make their work really effective, there should be an organization in each of the hundred counties of the State, even if only a "skeleton organization". For instance, this splendid society, which is doing so much good in an educational way, covers nine counties. From time to time, exceedingly important and vital matters come up which require prompt help from each county. A skeleton organization, with president and secretary for each county, to meet only when called upon, would be of great help in public health and in legislative matters. I would urge that you give serious consideration to this important subject.

And now, my friends, I must close. I hope you will take to heart these few simple thoughts, and that they may be the means of bringing about a better understanding between the public and the profession, so that they may work together harmoniously for the great cause of suffering humanity and the mutual benefit of all.

109 *College Place.*

SOME STOMACHS I HAVE MET.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.
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The chief problem in stomach trouble is the diagnosis, and a second like unto this is the type of treatment after the diagnosis has been made. It is well to recall some of the physiologic facts about the stomach, because the diagnosis must be made on a perversion of normal function, and frequently the stomach expresses by nausea, vomiting, heartburn or water-brash the affections of other and possibly distant organs. A large majority of all gastric symptoms, probably 80 per cent, are due to interference with the motor mechanism of the stomach, and this may come from a local lesion or reflexly from a distal lesion or from constitutional disease.

The stomach empties by waves of peristalsis that begin about the middle of the body of the stomach and proceed toward the pylorus in cycles. According to Cole, the most frequent cycle is what he calls the 4-cycle, in which there are four waves succeeding each other. There is in each wave a definite sys-

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tole and diastole. The systole takes up about seven-tenths of the cycle, and the diastole three-tenths, and the cycle occupies about 8 to 12 seconds. While this is going on the whole cardiac portion is tonically contracted as a hopper forcing food into the right half of the stomach. Though the peristaltic waves are not observable by the fluoroscope until they reach about the middle of the body of the stomach, Alvarez, Klein and others show that they really begin as ripples from the lesser curvature and the impulse initiated here proceeds down to the body of the stomach where the contraction increases. The lesser curvature of the stomach, then, contains important neuromuscular structures somewhat like the sino-auricular nodes of the heart and the bundle of His. Klein thinks there is a secondary center at the incisura. The contraction of the pyloric sphincter is apparently timed synchronously with the peristalsis of the stomach and the duodenum, so that when the full wave reaches the pylorus it relaxes slightly and a small spurt of gastric contents is emitted. The acid-alkali theory of opening the pylorus that was mentioned by Pavlov and by Cannon does not seem to explain satisfactorily the mechanism of the opening of the pylorus, because any irritation in the duodenum may cause reflexly its closure.

The secretory phenomena of the stomach frequently have much to do with the motor mechanism. Gastric juices and peristalsis are stimulated by food, and some foods stimulate the stomach more than others. For instance, meat proteins produce marked stimulation both of the gastric juice and of the peristalsis. If there is a spasm at the pyloric end of the stomach induced by an ulcer, or, reflexly, by a lesion elsewhere in the peritoneal cavity as has been well shown by Walter Hughson, this tends to dam back the food, and prolonged contact of food with the gastric mucosa increases the gastric juice; it may cause vomiting or at least produce regurgitation, or water-brash as it is called, and cause the gastric contents to regurgitate into the esophagus and frequently into the mouth. This regurgitated fluid is quickly swallowed, though it leaves a bitter taste. The lack of harmony in peristalsis may be caused by spasm induced by an irritation or ulcer, especially in the pyloric region and along the lesser curvature, or by a reflex spasm from a lesion elsewhere, or by some constitutional trouble, as acute infectious diseases, in which the toxemia seems to depress profoundly the more sensitive muscles of the gastro-intestinal tract which normally contract quickly and so alter the rhythm of peristalsis or even reverse it.

Alvarez has shown that the muscles along the lesser curvature near the esophagus contract at a greater rate than along the pyloric end of the stomach, and that the muscle in the upper jejunum contracts about 20 times per second, whereas in the lower ileum contractions are only about 10 or 11 per second. If, then, the more rapidly contracting muscle is affected by toxic products in acute infectious diseases, it is readily seen that the harmony of emptying is affected and the muscle so depressed may produce reverse peristalsis, nausea and vomiting.

Lesions not in a sensitive area of the stomach cause practically no symptoms unless there is perforation, bleeding or obstruction. An ulcer along the greater curvature, while unusual, may cause no symptoms unless some of these complications arise.

A diagnosis of gastric lesions cannot always be made by the clinical history or by physical signs, though a fairly accurate diagnosis can in a majority of cases be reached by a careful history and a physical examination of the abdomen. As the stomach responds so readily to affections elsewhere in the body, unless the symptoms point very emphatically to a definite gastric lesion, it will be best to treat the case tentatively, particularly regulating the diet. A history of hunger pains coming on regularly after meals, relieved by food, soda or vomiting, recurring chiefly in the spring or in the fall, and particularly in a young man, gives a probable diagnosis of gastric or duodenal ulcer.

Dr. W. H. Higgins, attending physician to St. Elizabeth's Hospital, in an excellent study of the clinical significance of hunger pains, with an analysis of a group of cases from St. Elizabeth's Hospital, has shown that, of 162 gall-bladder and gastro-intestinal infections with hunger pains, this symptom was present in 50 per cent of the peptic ulcers, 15.4 per cent of cases of chronic cholecystitis, and 17.5 per cent of appendicitis cases. (Higgins, Wm. H., Clinical Significance of Hunger Pains. *Jour. Am. Med. Asso.*, Feb. 23, 1924, vol. 82, pp. 599-601). Hunger pains, as Cannon and Carlson have demonstrated, may occur from

normal gastric contractions in fasting in the absence of any lesion. They are not pathognomonic of peptic ulcer, but, as Higgins has shown, occur also in chronic cholecystitis and chronic appendicitis and are probably the result of reflex contractions either from a lesion in the stomach or duodenum or from the absorption of bacterial toxins through the branches of the vagi. Higgins found that adhesions from extragastric lesions are doubtless factors, but are not essential in the production of hunger pains when there is no peptic ulcer.

Hemorrhage from the stomach is suggestive of ulcer, though it may be from other causes, such as hepatic or splenic disease or possibly some toxic erosion of the mucosa which has not become an ulcer. Vomiting of blood, too, occurs occasionally from hemorrhages in the pharynx about the tonsillar region, or from the esophagus when the blood may be unconsciously swallowed. Roentgenologic examination by a competent radiologist is the best means of diagnosis of gastric lesions, and should always be utilized before a definite diagnosis of peptic ulcer is made and particularly if there is a suspicion of cancer.

One of the most important problems in regard to gastric lesions is the diagnosis of cancer of the stomach. Statistics show that yearly in the United States there are about 100,000 deaths from cancer, and of these fully one-third are due to cancer of the stomach. Unfortunately, the symptoms of cancer of the stomach are not typical. When we begin to realize the fact that cancer of the stomach may be accompanied or preceded by any number or variety of gastric symptoms, or by no gastric symptoms at all, we will be more alert for this lesion. There is no known cure for cancer of the stomach except by operation, and in the early stages operation should give excellent results. According to Scott (Scott, W. J. Merle, The Relationship of Carcinoma and Callous Gastric Ulcer, *Surg., Gyn. & Obst.*, Feb., 1928, vol. xlvi, pp. 199-211), while the prognosis from cancer of the stomach was considered hopeless twenty years ago, there are now numbers of fifteen to twenty year cures, and in the early stages, according to several authorities, resection should give from 22 to 31 per cent of five-year cures. As in other regions, the hope of curing cancer of the stomach lies in early diagnosis and radical operation.

Scott sums up evidence as to the relationship between peptic ulcer and gastric cancer. He goes over all the evidence carefully and shows that even if the stringent restrictions that are claimed by those who oppose the frequency of the causation of cancer by peptic ulcer are followed, there are still cases in which such etiology does exist. In other words, if all cases are thrown out except those in which cancer is only found in the margin of the ulcer and not in the base, there still remain some in which these indications are filled. He quotes a case of his own in which symptoms of gastric ulcer had existed for twelve years and at operation an ulcer was found which showed carcinomatous changes in only one portion of the periphery. On the contrary, many ulcers which cannot be distinguished grossly from peptic ulcers are shown on histologic examination to be definitely cancer and to have cancer at the base. Ulcers of this kind often give a history of many years' standing. He reports two cases, in one of which the symptoms of ulcer were of five years' standing and in the other of thirty years'. On microscopic examination there was cancer at the base as well as on the side. Whether these were slow cancerous growths which finally broke down, or whether they were originally peptic ulcers which turned into cancer, is a matter of not much clinical consequence. The history of peptic ulcer had existed over many years. On operation, an ulcer was found which proved to be cancerous.

All three of these cases are from the records of Peter Bent Brigham and have been carefully studied. According to Scott, a just estimate of cases that appear to be chronic gastric peptic ulcer but which are cancerous either from the beginning or have originally been atypical peptic ulcers that have become cancer, is from 10 to 20 per cent of all the chronic gastric ulcers. Accepting this statement, which is much lower than the opinion of MacCarty of the Mayo Clinic, it means that one patient out of every five or ten with symptoms and roentgenologic evidence of chronic gastric peptic ulcer has definite gastric cancer and will in all human probability die from gastric cancer if operation is not performed to excise it. This estimate, of course, does not include the acute ulcers which heal rapidly and in which the symptoms have existed for only a few weeks, but only the chronic callous gastric ulcers in which the symptoms have lasted for several months or years. There may be

confusion, too, in the fact that occasionally gastric peptic ulcers which seem to improve somewhat, both in symptoms and in roentgen-ray appearance, later progress as cancer.

Scott, after a careful review of the literature and a review of the cases at Peter Bent Brigham and other hospitals, comes to the conclusion that from 10 to 20 per cent of the cases diagnosed clinically as chronic gastric ulcer will prove to be cancerous.

Many cases of cancer of the stomach arise without preceding symptoms of ulcer and can only be detected by X-ray examination. In these patients X-ray examination often reveals an advanced stage of cancer that cannot be cured by operation. This, however, does not seem a sufficient excuse to neglect those gastric cancers which apparently originate either as peptic ulcers or which have a clinical ulcer history.

It may be of interest briefly to review the operations on the stomach and the duodenum that I have done at St. Elizabeth's Hospital from January 1, 1927, to March 1, 1928. This comprises a period of fourteen months, and aside from the operative and pathologic features, there are some clinical observations in connection with these cases that are still fresh in my memory in addition to the actual recorded facts. There were forty-one operations done on the stomach and duodenum during this time. Sixteen were posterior gastroenterostomies, eight of which were for duodenal ulcer, one for recurrent ulcer in the gastric stump after gastrectomy, and the remainder for obstruction at the pylorus or duodenum. There were three deaths. One of these patients died five days after operation, apparently from myocarditis. Necropsy showed the gastroenterostomy in good condition. Another death, Mr. S., was a patient in whom a partial gastrectomy for extensive phagedenic type of gastric and duodenal ulcers had been done five months before. This case is reported more fully later on. The third death was in a woman, 79 years old, with carcinoma of the pancreas which had ruptured into the duodenum and gall-bladder. She died fourteen days after operation with cerebral hemorrhage. Necropsy showed the gastroenterostomy in good condition.

The gastroenterostomies were done without clamps. In addition, there was one anterior gastroenterostomy in a patient in whom a posterior gastroenterostomy had been done six years before by another surgeon for duodenal ulcer and there was apparent closure of the stoma. The patient had marked arteriosclerosis, the femoral arteries standing out like glass rods. Under a local anesthetic, an anterior gastroenterostomy was done. The stomach was enormously dilated. The patient improved for a while but eventually died.

There were sixteen partial gastrectomies: Five of these were for cancer of the stomach, one for dumping stomach and gastrojejunal ulcer following a gastroenterostomy done several years ago elsewhere, six for ulcer of the stomach, one for duodenal ulcer, two for duodenal ulcers that had perforated and been plugged by gall-bladder or pancreas, and one for gastric ulcer with an acute perforation. The patient on whom the partial gastrectomy was done for dumping stomach died. The mesocolic vessels were injured while disconnecting the gastroenterostomy. This necessitated a resection of the transverse colon. An obstruction occurred, and later there was infection. The union of the stomach to the duodenum seemed to be in good condition. The patient died from the operation upon the colon.

One of the patients on whom there was a partial gastrectomy for cancer of the stomach died. He was 75 years of age. Part of the mesocolon was included in the rather extensive resection for cancer of the stomach. The circulation to the transverse colon seemed feeble, but the patient's condition was not good, so the colon unwisely was not resected at the time. Later, there was gangrene of the colon which compelled resection and the patient died from sepsis. In a similar case, a patient, 70 years of age in whom the colon was resected at the time of operation, made a satisfactory recovery from the operation.

Of these five patients with carcinoma of the stomach, three of them were over 70 years of age. One of them, 77 years of age, died eight months after operation from acute nephritis, and without clinical evidence of any recurrence of the cancer of the stomach; another, 70 years of age, had a satisfactory recovery for several months but now, while living, apparently has a metastasis in the liver. The other two patients are so far without recurrence, one of them having been operated upon about eight months ago and the other two months ago.

There was one Rammstedt pyloroplasty for congenital pyloric stenosis.

There were six pyloroplasties, five for duo-

denal ulcer and one for pyloric stenosis. There were no deaths.

In one case there was a simple closure of a perforated duodenal ulcer. This patient had a history of duodenal ulcer and had had medical treatment elsewhere for some time. When the ulcer perforated with typical symptoms, his family doctor earnestly advised operation, but the patient postponed it for twenty-four hours, when he was practically dying. At operation the abdomen was filled with sero-pus and gastric contents, and there was general peritonitis and a hardly palpable pulse at the wrist. A few sutures were placed in the perforated duodenal ulcer. The abdominal cavity was flushed out. The patient apparently was better for a while but died three days later with a high temperature and delirium. Necropsy showed the abdominal cavity in fairly good condition. The ulcer was closed.

Besides these, several other operations have been done. There were three resections of the vagus nerve for spasm, and seven plications of the gastro-hepatic omentum. These, however, were accompanied by other operations, were of secondary consideration, and are not included in this list of gastric operations. It has been shown by Hughson (Hughson, Walter, Reflex Spasm of the Pylorus and Its Relation to Diseases of the Digestive Organs, *Arch. Surg.*, 11:136-151, July, 1925) that resection of the vagus nerve high up on the stomach is of some value in pylorospasm. It does not, of course, supplant removal of an organic lesion.

There were, then, three patients out of the sixteen posterior gastroenterostomies and one anterior gastroenterostomy, that died, and two of the sixteen partial gastrectomies died. In the two deaths from partial gastrectomy, both were apparently due to resection of the colon.

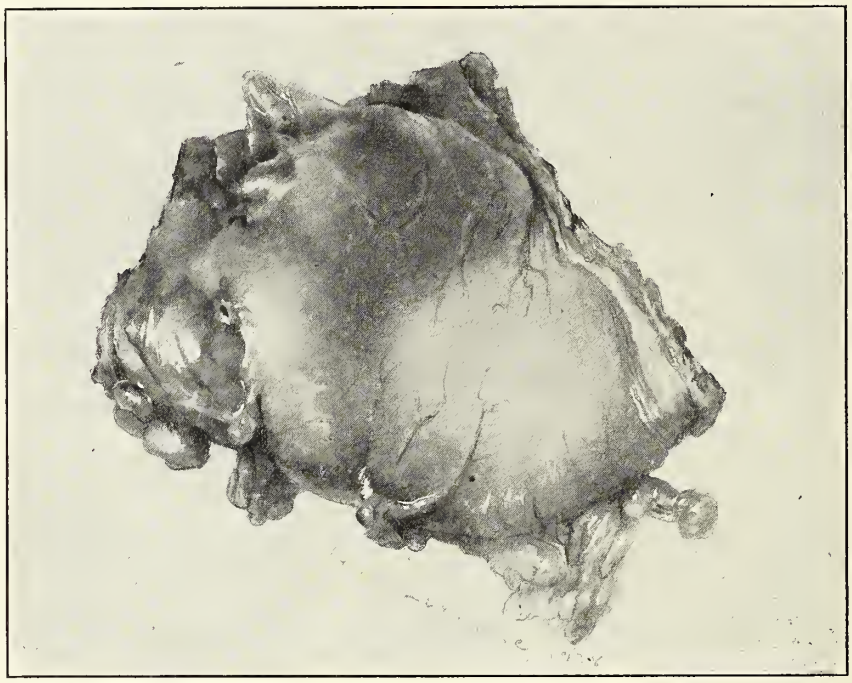

Fig. 1.—Mr. W. Anterior veiw of specimen containing perforated gastric ulcer removed by partial gastrectomy.

In all the patients that had died necropsies have been performed.

The technic of the partial gastrectomy in all these cases is one that I have been using for several years and is a modification of the Billroth I operation in which the stump of the stomach is sutured along the lesser curvature to the upper border of the duodenum and an incision is made in the anterior wall of the duodenum to flare it open. This is a very satisfactory operation. In one case in which there was almost a total gastrectomy I was able to bring the small remaining pouch of the cardiac portion of the stomach to the duodenum. This pouch was so small that it probably held only

about two and a half ounces, but has since dilated so as to double this capacity.

As regards the transformation of ulcer to cancer, I have had two patients that seem to illustrate this distinctly. One of them has been previously reported, a man 70 years of age, with a history of gastric symptoms recurring at intervals and relieved to some extent by soda, and vomiting, for forty years. Another, Mr. M., gave a history of gastric symptoms relieved by ulcer diet for thirty years. In both of these cases there seems to be marked clinical evidence that there was a preceding peptic ulcer which formed the basis of the cancer, and if they had been operated upon in the early stages a complete cure might have resulted.

Among the particularly interesting cases is that of Mr. L., age 44, drug store clerk, who entered the hospital complaining of stomach trouble which began five months before admission. He first lost his appetite, then a burning sensation developed in the stomach. This burning pain would come on in the afternoon and would wake him up at night. Neither food nor soda relieved him, but aspirin did. He became nauseated and vomited and had large quantities of gas. For two weeks before admission he had no pain but could not retain his food. He lost 30 pounds during his present illness. Roentgenologic examination showed a large tumor in the stomach. Operation showed extensive involvement of the stomach with two solid masses which were adenocarcinoma. An almost complete gastrectomy was done. He made a satisfactory convalescence.

Fig. 2.—Mr. W. Interior view of perforated gastric ulcer. Same specimen shown in Fig. 1.

One patient, Mr. S., 51 years of age, had had a prostatectomy a year ago. His present illness began about six months ago with indigestion and pain in the epigastrium, especially after taking food, with some nausea

but no vomiting. Within the past few months the stools had been tarry. He had lost 25 or 30 pounds in weight. He complained chiefly of pain in the epigastrium and beneath the sternum, coming on irregularly after meals. There was also dull pain in the back. The patient had never vomited. He was afraid to eat any food because of the pain that it caused. Occasionally an alkaline powder would give some relief, though not complete, but this had lost its effect. A partial gastrectomy was done. There were numerous enlarged lymph nodes. without clamps. He improved for a while, then gradually sank and died. Necropsy showed a very extensive ulcer of the stump of the stomach which had perforated posteriorly so that the base of the ulcer posteriorly consisted of a large portion of the pancreas. Anteriorly it had also perforated and was plugged by the liver. The ulcer was large and the margins were irregular and apparently necrotic. There was no leakage about the gastroenterostomy. There was no peritonitis, the perforations having been stopped by the vis-

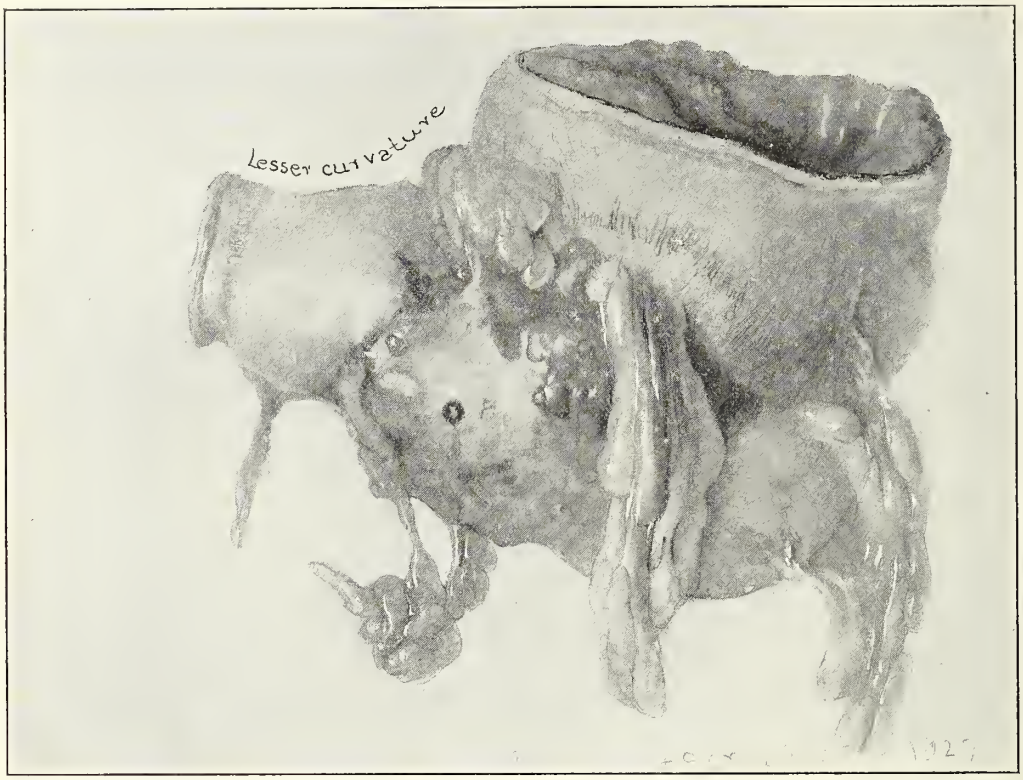

Fig. 3.—Mrs. H. External view of specimen of advanced carcinoma of the stomach removed by partial gastrectomy.

Frozen section of a lymph node, however, showed hyperplasia and no evidence of cancer. The specimen showed extensive ulceration of the phagedenic type extending from the stomach well into the duodenum. Apparently all of the actual ulcerous tissue had been removed, though the stump of the stomach was edematous. He made a satisfactory immediate recovery, and for several weeks after going home was better. The pain recurred and, in spite of medical treatment, persisted. He was extremely anemic, and had lost much weight. On February 25, 1928, I operated upon him again, doing a posterior gastroenterostomy cera. This case apparently represents a type of progressive ulceration which is difficult to control by any means. Such cases are always fatal without operation, and may occasionally be saved with operation. His death following gradual toxemia and exhaustion occurred on March 8th, after the period mentioned in this resume, but as the case was an unusual one it was thought it would be interesting to include it.

Another patient, Mr. W., an anemic man, age 34 years, a civil engineer, complained of "gnawing pain in the epigastrium". He had had intermittent attacks of nausea and vomit-

ing. Pain was worse when the stomach was empty and was relieved by food and alkali. He had had periodic attacks for the past eight years, and the present illness began nine months before admission. The first attack followed "blood poisoning." Roentgenologic examination a few weeks before entering St. Elizabeth's Hospital showed that the stomach did not empty normally. He did not vomit any blood, but often passed tarry stools. Twenty minutes before the time set for operation the patient was taken with sudden pain in the epigastrium: he "doubled up", and morphine did not entirely relieve him. His abdomen was board-like. At operation in which a partial gastrectomy was done the ulcer, which was in the anterior pyloric portion of the stomach, had just perforated. After a somewhat stormy immediate convalescence he recovered satisfactorily. (Figs. 1 and 2).

In an advanced case of cancer, Mrs. H., there was a history of a palpable tumor for more than a year. This patient was operated upon July 28, 1927. The growth was extensive and a partial gastrectomy was done. At present she is apparently without recurrence. (Figs. 3, 4, and 5).

One of the pyloroplasty operations was for persistent bleeding. The patient was a married woman, 41 years of age, with a history of having had indigestion at intervals for the past three years. At first it came on as a gnawing uncomfortable pain in the upper part of the abdomen, and appeared soon after breakfast, but was often relieved by milk. The spells would continue for several weeks, and then there would be remissions for a month or two. Three months before operation the patient vomited for the first time. After that time the indigestion was almost constantly present, with occasional vomiting. There were tarry stools. The patient was on competent medical treatment. In spite of that, however, there was but little improvement and about ten days before admission to the hospital she vomited blood. She was confined to bed for a while, and the medical treatment was continued. There was more vomiting of blood, and, finally, ten days after the first vomiting of blood, the patient had a very severe hemor-

Fig. 4.—Mrs. H. Internal view of advanced carcinoma of the stomach. Same specimen as shown in Fig. 3.

rhage from the stomach and was greatly shocked. She was removed to the hospital, a pyloroplasty was done and the ulcer in the first part of the duodenum was excised. (Fig. 6). On opening the stomach it was seen that the ulcer was still bleeding. She was transfused after the operation and made a satisfactory recovery.

Most cases of bleeding from duodenal or gastric ulcer recover from this symptom by the general medical treatment, but recurrent bleeding and large massive hemorrhages demand operation.

Instead of waiting for recovery from the hemorrhage, it would seem best to operate soon afterward, provided a satisfactory donor for transfusion of blood can be had. When the hemorrhage is repeated and is sufficient to have produced a marked anemia, there seems to be no object in waiting for a recovery of strength, for bleeding may recur at any time, when, by transfusion of blood, the lost blood can be restored.

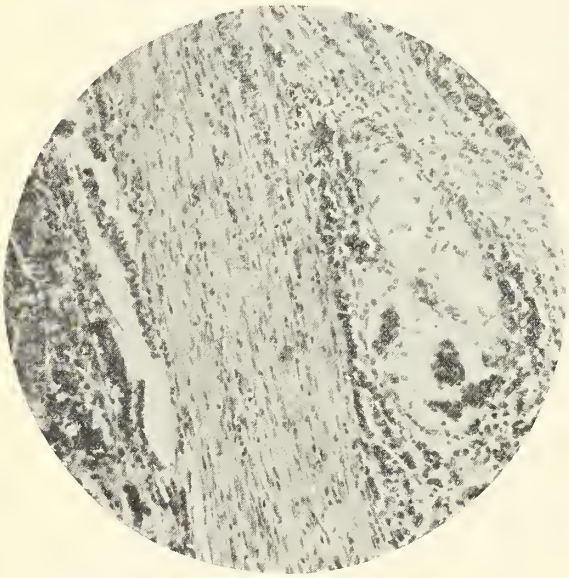

Fig. 5.—Mrs. H. Photomicrograph of specimen seen in Figs. 3 and 4. Adenocarcinoma of stomach with areas of colloid degeneration (X 150).

Undoubtedly early cases of peptic ulcer should be treated by medical means. The medical treatment should consist largely in diet. Alvarez' recommendations are based on his physiologic knowledge and consist largely of giving a glass of some combination of milk or milk and cereal between meals. He says he has not administered a dose of soda for several years. Belladonna will occasionally help the spasm. Moses Einhorn (Einhorn, Moses: Suspenders vs. Belts in Treatment of Gastric and Duodenal Ulcers. *Am. J. Med. Sciences*, March, 1928, pp.. 395-404) reports distinctly better results in the treatment of gastric and duodenal ulcers when suspenders are worn instead of belts. Belts apparently have a de-

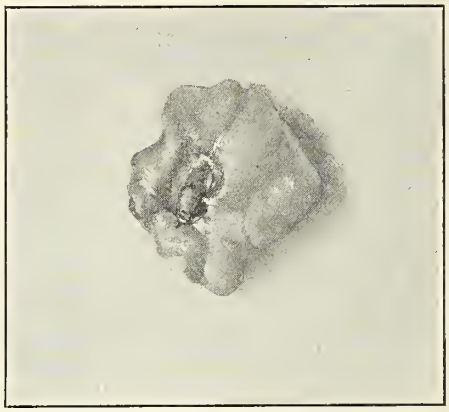

Fig. 6.—Specimen of bleeding duodenal ulcer removed by pyloroplasty. See text.

leterious pressure effect. If, however, the patient is not materially benefited after a faithful trial of medical treatment for six to eight weeks, other measures should be instituted. If the ulcer is a duodenal ulcer, medical measures may be used more safely, but if it is a gastric ulcer Alvarez says if the physician lets such a patient "drift on with medical treatment, he assumes a tremendous responsibility", when there is a possibility of the lesion being cancer or at least of becoming cancerous.

If operation is necessary, the type of operation chosen should be that which is best suited for the pathology that is found. The routine use of any one surgical procedure in all cases will often bring unsatisfactory results, whereas an adaptation of the surgical operation to fit the pathology will give the best results.

THE TREATMENT OF MASSIVE COLLAPSE OF THE LUNG.*

By
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and
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During the last few years such an extensive literature has grown up about the subject of massive collapse of the lung that further papers not definitely contributing new facts would

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seem to be superfluous. In spite of the many recent exhaustive studies of this condition, very little attention has been directed to the treatment. In view of this, it seems worthwhile to report a recent case in which a simple method of treatment had an immediate and successful result.

The condition, variously spoken of as massive pulmonary atelectasis, massive collapse of the lung, and obstructive massive apneumatosis of the lung, may be briefly described as one in which a previously well aerated lung, or lobe, becomes, more or less suddenly, deflated. And this deflation is not associated with any foreign body obstruction of the bronchi, or with any increase in extrapulmonary pressure. It is associated with an increase in the intrapleural negative pressure, and, accordingly, the adjacent structures are pulled in toward the affected lung. There then appear the elevated diaphragm, the shifting of the heart and other mediastinal structures toward the collapsed lung, and the sinking in of the corresponding chest wall. In using the qualifying term "massive," we believe that, for purposes of clarification, this should always connote involvement of one or more lobes. That atelectasis of smaller parts of the lung is a common post-operative pulmonary complication has been stressed by Mastics, Lee, and others. Mastics says that pulmonary atelectasis accounts for 70 per cent of all post-operative pulmonary complications. The association between obstructive atelectasis and lobar pneumonia has recently been studied by Coryllos.

Since Mendelssohn, in 1844, first experimentally produced pulmonary atelectasis by obstructing the bronchus of an experimental animal with various substances, many investigators have repeated this work. Jackson and his co-workers especially have drawn attention to the similarity between the pulmonary collapse caused by foreign body bronchial occlusion and the massive collapse following operation. They have pointed out that in the latter condition true bronchial obstruction is produced by thick mucoid secretion. More recently, Coryllos and Birnbaum, of New York, and Lee, Tucker, Ravdin and Clerf, of Philadelphia, have successfully reproduced in dogs the condition of massive collapse of the lung by first obliterating the cough reflex and then obstructing a bronchus. The Philadelphia workers have gone one step further and used the thick mucoid material obtained from a human case to block the bronchus of a dog. It thus seems to have been fairly conclusively shown that bronchial obstruction and obliteration of the cough reflex are two important factors in the genesis of massive collapse of the lung. The nature of the initiating element, however, is still problematical.

Considering the importance attached to bronchial obstruction in this condition, it naturally follows that treatment has been directed along that line. Following the lead of Jackson and Lee, bronchoscopic aspiration of occluding secretion has been reported by Tucker, Harrington, and others, with a high degree of success.

Sir John Rose Bradford, writing in the Oxford Medicine, says that, "no special treatment is needed beyond encouraging, so far as the condition of the patient allows, the free movement of the chest in respiration." Sante, in January, 1927, reported a case successfully treated by such simple means. The patient was placed on his good side and made to cough. By means of the fluoroscope, the collapsed lung was observed to re-expand. Since this report, others have successfully used this method. Tucker, Lee, Ravdin, Coryllos, and others, feel that this simple procedure will be effective in many cases, but urge the importance of bronchoscopic aspiration in those that fail. They point out the danger of infection intervening, with production of pneumonia, abscess, or bronchiectasis.

We have recently had a case that well illustrates the dramatic changes often produced by simple postural change and coughing.

Report of Case

A 16 year old white girl entered the University Hospital on March 24, 1928, complaining of right lower abdominal pain. The onset had been sudden and severe two days previously, but the attack had been of short duration. It recurred after twelve hours and persisted. She had been nauseated, but had not vomited. On admission, she was found to have moderate tenderness and slight muscle spasm in the right lower abdominal quadrant. Heart and lungs were apparently normal. Temperature 99° F., leukocyte count 13,500, urine normal. Later in the day, her pain having increased, and her leukocyte count having risen to 16,000, it was decided to operate upon her. At this time her temperature was 98.6,

pulse 88, respirations 22. An exploratory celiotomy under nitrous oxide, oxygen and ether anesthesia was done by Dr. Rollins and nothing abnormal found. The appendix was removed as a routine procedure. The duration of the anesthesia was only 25 minutes.

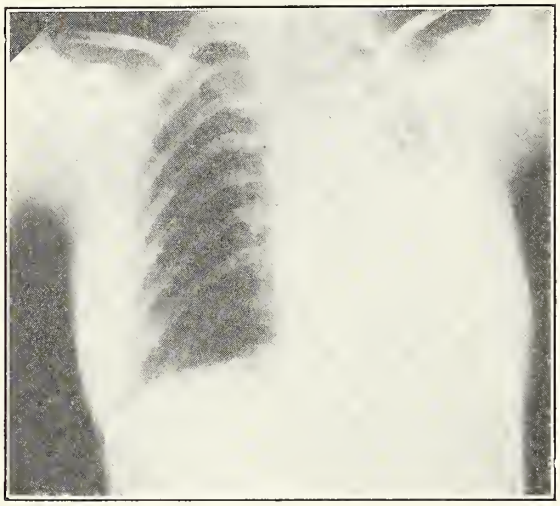

Fig. 1.—X-ray taken March 26th, the second day after her abdominal operation, and approximately twenty-four hours after the beginning of her chest symptoms. Note the entire displacement of the mediastinal structures to the affected left side; the homogeneous density; the narrowed intercostal spaces; and the elevation of the diaphragm on that side. The right side is unusually clear. These are the characteristic X-ray findings in massive collapse of the lung.

Immediately following the operation, her temperature began to rise and by 8 P. M. had reached 102.8°. The next morning, March 25th, she complained of pain in her chest and a severe headache. Examination showed dullness over the entire left chest and axilla continuous with the cardiac dullness. Her cardiac impulse was not noted. Breath sounds were absent and there were no rales. Her temperature reached 104° in the afternoon, pulse was 146, and respirations 40. By midnight, her temperature had fallen to 99° and her respirations were only 20. The nurse's note was, "wheezing sound very noticeable on respiration." The second morning after her operation, March 26th, she was complaining of severe pain in her back in the mid-dorsal region. Her temperature was 101°, pulse 100, respirations 30. Examination showed, in addition to the signs previously noted, that the left chest did not move on respiration, and appeared smaller than the right chest. The cardiac impulse was felt just outside the left nipple. The report on an X-ray at this time was—"A flat film of the chest shows the heart and mediastinal structures displaced entirely to the left of the vertebral column. The left side of the diaphragm is elevated. There is a homogeneous increase in density over the entire left chest which obscures all details. Conclusions: Massive collapse of the lung."

The patient was then turned on her right side and urged to cough. This she did, although it caused her severe pain. She coughed up several greenish mucous plugs. After carrying out this procedure for about three minutes she was turned on her back and examined. The left chest was definitely moving, though not quite as freely as the right, the cardiac impulse was felt to be just inside the nipple, and percussion note over the anterior chest was resonant, but was slightly dull in the axilla. Breath sounds were distinctly audible over the chest and axilla, though still slightly diminished.

A second X-ray was then taken within thirty minutes of the first, and showed the heart and mediastinal structures back in normal position with only a very slight increase

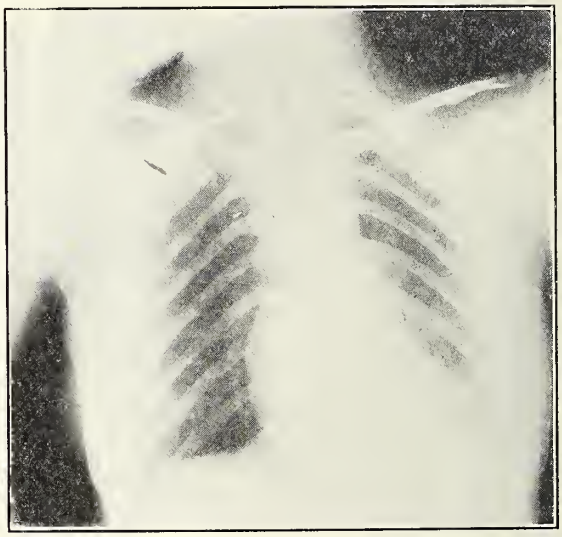

Fig. 2.—X-ray taken five minutes after having patient lie on her right side and cough several times, and within thirty minutes of the one shown in Fig. 1. There has been a return of the mediastinal structures to their normal position; only a slight haziness of the affected left side remains; and the intercostal spaces are again normal. The diaphragm is still high. It is almost always the last structure to return to normal.

in the lung markings and a slight diffuse haziness.

She continued to have her backache for the next four hours, during which time it gradually disappeared. Her temperature dropped

to 99.6 in the evening, her pulse to 88, and her respirations to 16. The next day she had no complaints, her chest was clear, and from then on she made an uneventful recovery. She was discharged as well on April 11th.

BIBLIOGRAPHY.

1. Bradford, J. R.: Oxford Medicine. Oxford University Press, 1920. II, 127.
2. Jackson, Chevalier, and Lee, W. E.: Tran. Am. Surg. Ass., 1925, XLIII, 723.
3. Tucker, Gabriel: *Surg. Gynec. & Obst.*, 1926, XLII, 743.
4. Sante, L. R.: *Radiology*, 1927, VIII, 1.
5. Idem: *J. Am. Med. Assn.*, 1927, LXXXVIII, 1539 (May 14).
6. Mastics, E. A., Spittler, F. A., and McNamee, E. P.: *Arch Surg.*, 1927, XVI, 155.
7. Elkin, D. C.: *Ann. Surg.*, 1927, LXXXVI, 885.
8. Coryllos, P. N., and Birnbaum, G. L.: *Arch. Surg.*, 1928, XVI, 501.
9. Lee, W. E., and Tucker, Gabriel: *Atlantic M. J.*, Feb., 1928.
10. Ravdin, I. S.: Personal communication.
11. Tucker, Gabriel: Personal communication.

For a more or less complete bibliography of the subject of massive collapse of the lung, the reader is referred to the articles of Coryllos and Birnbaum, and of Mastics, Spittler and McNamee.

NOTES ON THE COURSE AND TREATMENT OF CORONARY ARTERY OCCLUSION.

By LESLIE T. GAGER, M. D., Washington, D. C.

The clinical features of coronary artery occlusion, and the structural changes in the heart muscle of which they are the expression, have become well-defined. The outstanding symptom is the occurrence of substernal pain, usually severe, often radiating, and characteristically persistent—the status anginosus. The signs are those of myocardial insufficiency, frequently with a sudden and striking fall in blood pressure; a febrile movement and leucocytosis as the process of infarction progresses; in some instances a pathognomonic friction rub as the area of myocardial degeneration emerges externally and involves the pericardium; and, more rarely, embolic phenomena in the greater or lesser circulations if the extension of this degeneration is inward with the formation of intracardiac thrombi. There is also, in coronary thrombosis, an upward convexity of the S-T portion of the electrocardiogram, with a T-wave inversion, which is found in no other myocardial disease. Auriculo-ventricular heart block and fibrillation of the ventricles are other disorders of heart action which may follow the failure of adequate coronary blood supply, but, by reason of their nature, are rarely recognized.

A New Responsibility

From the diagnostic point of view, therefore, a searching history, a careful physical study and the correlation of changes in findings from day to day, together with the support of the laboratory data, develop in most instances of coronary occlusion, a clear, convincing, clinical picture.

The result is that occlusion of a coronary vessel has been found to be not a rare form of arteriosclerotic heart disease; and, consequently, for its recognition and proper treatment, new responsibilities have been placed upon the clinician, very much as in the case of the definition of acute appendicitis and its train of complications a generation ago.

That an analogy between these diseases, in point of gravity, is not altogether far-fetched, may be shown by the presentation of some examples of coronary occlusion seen in private practice.

Case Reports

Case 1.—E. F., male, age 51, a Jewish real estate operator, had suffered a sharp attack of substernal pain at the age of 49 years. At that time his blood pressure was found moderately elevated, there was slight peripheral arterial thickening, the heart showed no pathological change, and the electrocardiogram was normal. The diagnosis of angina pectoris was made, and, with some restrictions in the activities of his business life, this man went two years without symptoms.

After a restless night in a Pullman sleeper, and an hour after a moderate breakfast, he was seized by severe substernal pain, which was unrelieved six hours later when he was seen in consultation at his hotel. Except for muffling of the heart sounds, in a rather emphysematous chest, notable physical signs were absent. The blood pressure was 140/80, pulse 90, and regular in rhythm. The temperature was normal.

Morphine was given at once, with some relief, and the patient was kept at rest in bed. On the following day, temperature rose to 101°, while blood pressure fell to 90/50, with a pulse rate of 120. On the third day, 60 hours after the onset, a pericardial friction rub was heard. The use of morphine was continued liberally because of pain; abdominal distention was relieved by modified colonic irrigation. Digitalis was withheld until the fourth day of

illness, when a terminal arrhythmia appeared [ventricular fibrillation (?)] and the patient succumbed 76 hours from the beginning of the attack.

Case 2.—C. V., a man, age 63 years, American of long-lived parentage, an executive, had enjoyed good health throughout his life, and had worked under considerable mental strain and with rare vacations. At 61 years, he, like the first patient, had had a premonitory attack of substernal pain. An examination revealed a definite hypertension, but there were no abnormal cardiac signs. The electrocardiogram, however, showed involved T waves.

This patient was seen in consultation three weeks after the occurrence of a second attack of pain beneath the sternum, which came on

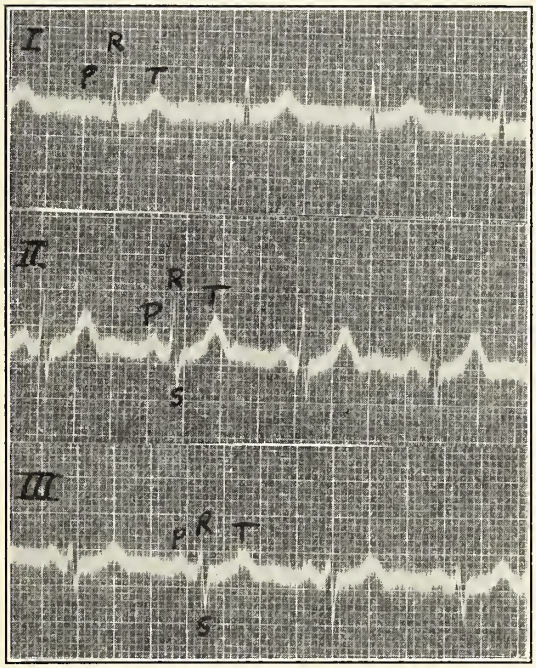

Fig. 1.—Electrocardiogram from patient with arteriosclerotic heart disease. The rather small amplitude of the R and S waves (the Q is negligible in this record) indicate poor muscular tone. The S-T portion and the T-waves illustrate the normal.

several hours after unusual physical exertion. The automobile in which he was riding had a flat tire, and, in order to get help, he walked rapidly to a garage half a mile away. The pain was severe, and persistent. He was kept in bed at his home, and the pain subsided after the first day. Throughout the three weeks, his temperature rose to 99 and 100, and his blood pressure, ordinarily 170 systolic, was 100/60 at the date of my examination. The pulse was slow, and the heart sounds were muffled. There were no murmurs nor was friction noted.

The electrocardiogram, taken at the bedside with portable apparatus, showed normal a-v conduction, no change in the time of the QRS complex, but the S-T portion of the record, in the first two leads, sprang from the descending limb before the base line (the isoelectric level) was reached, and the T-wave was deeply inverted. A temperature of 99 was recorded on this day, the heart rate being 70. No digitalis had been given.

Under the circumstances of his home and because of his symptomless progress, the patient had been allowed lavatory permission, but otherwise was kept at physical rest. A number of short business conferences had also been permitted, one on the afternoon of this day.

On going to the bathroom the next morning, the patient dropped dead. Necropsy was refused. Ventricular rupture was considered the probable event.

Case 3.—D. M., a man, age 50 years, American, a lawyer, was seen with his family physician six weeks after the occurrence of severe pain underneath the upper sternum, radiating into both arms. The attack came on while the patient was at rest in the evening, following the exertion during the afternoon of sailing a boat in a heavy wind. The blood pressure fell from 150 systolic to 90 systolic. After four weeks in bed, he was allowed to return to the city. Digitalis was used in his case.

At the time of my examination, the blood pressure was still 104/68. The heart was enlarged, the sounds were muffled, and a protodiastolic gallop rhythm was present at times. There was a blowing systolic murmur at the apex. No temperature elevation was present. An electrocardiogram later showed typical coronary changes.

Most cautiously a gradual increase in exercise was allowed. Blood pressure rose gradually, and the man worked for 2½ years. A newspaper article then recorded his sudden death soon after boarding a railroad train.

Case 4.—G. V., a man, age 56 years, American, a physician, consulted me because of recurrent attacks of substernal pain. Except for right lobar pneumonia and empyema, with rib resection, at 38 years, he had been healthy. At the age of 48, while walking in a cold damp snowstorm, he had "bad angina", with sub-

sternal pain extending down either arm or both, stopping on cessation of exertion and of the cold and damp weather. In the war, he had double influenzal pneumonia, without cardiac phenomena. On exercise or emotion, however, he continued to have moderate to severe pain, always stopping soon. At this time his blood pressure was 140/90. Occasionally, he could walk three or four miles without pain. Another day, the angina was bad on the least up-hill exertion. It was, as he said, very inconsistent.

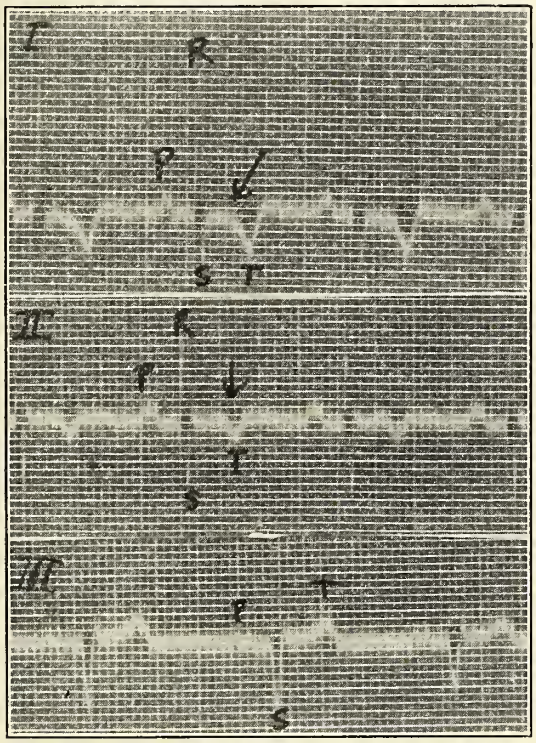

Fig. 2.—Patient, C. C., man, age 64 years (case 5). The upward convexity of the S-T interval is marked in Lead I. The T-wave is inverted in Leads I and II. There is left ventricular predominance. This record is taken 6 months after a mild coronary occlusion, and is considerably more charteristic than that taken shortly after the attack.

Electrocardiograms taken over a period of three years were entirely normal. A gastrointestinal series, suggested because of flatulence and "chronic fermentative colitis," showed normal motility everywhere.

Ten days before he came to me, and eight hours after a lunch of indigestible food, this patient had his first spontaneous anginal pain. The attacks had been worse than usual for the preceding 12 days, following a climb up a steep bank. The duration of this last attack was nine hours.

The examination showed slight peripheral sclerosis, blood pressure 154/80, no enlargement of the heart, fair sounds, no murmurs. In the electrocardiogram appeared for the first time a distinct inversion of the T-wave in Lead II.

On a low diet and the symptomatic use of sedatives, he has been getting along comfortably and doing a large amount of scientific investigation for over two years.

Case 5.—C. C., a man, age 64 years, American, an office worker, had been in good health except for occasional attacks of indigestion, which were relieved by restriction of diet and alkaline powders. There were no previous attacks of anginal pain. Blood pressure had been normal, and careful examination had shown only slight arterial change and no evidence of structural heart disease.

This patient was seen two weeks after an attack of pain described as beneath the lower sternum. It appeared at midnight, six hours after a moderate supper. The pain was severe, conveyed to the patient a due sense of its gravity, and lasted 1½ hours. It did not radiate. The bowels were somewhat constipated. The attack was regarded as indigestion, and the patient kept at work.

Examination revealed a normal tension, 130/80, no enlargement of the heart, rate 72 beats per minute, with occasional premature systoles. Systolic murmurs, however, were present both at the apex and aortic area. The electrocardiogram showed in Lead I a convex S-T interval and an inverted T-wave.

The patient has had no further attacks in the last six months and has gone without interruption to his work, which, it should be added, is light in character, and within a few blocks of his home.

Case 6.—A. B., man, 52 years of age, a physician in active practice, was seen with the complaints of substernal oppression and tingling in the right hand, symptoms which had made their appearance five months before examination. Both systolic and diastolic arterial tension were then found elevated.

There had been no previous ill health except influenza, followed by pneumonia, at 50 years.

For six weeks prior to the present attack, the patient had never felt better. Then a mild laryngitis was followed by a return of the

substernal discomfort. This was not brought on by effort, and was steady and persistent.

The physical findings were obesity, a blood pressure of 158/108, peripheral vessels not felt but retinal arteries somewhat irregular and tortuous, slight cardiac enlargement, sounds of good quality.

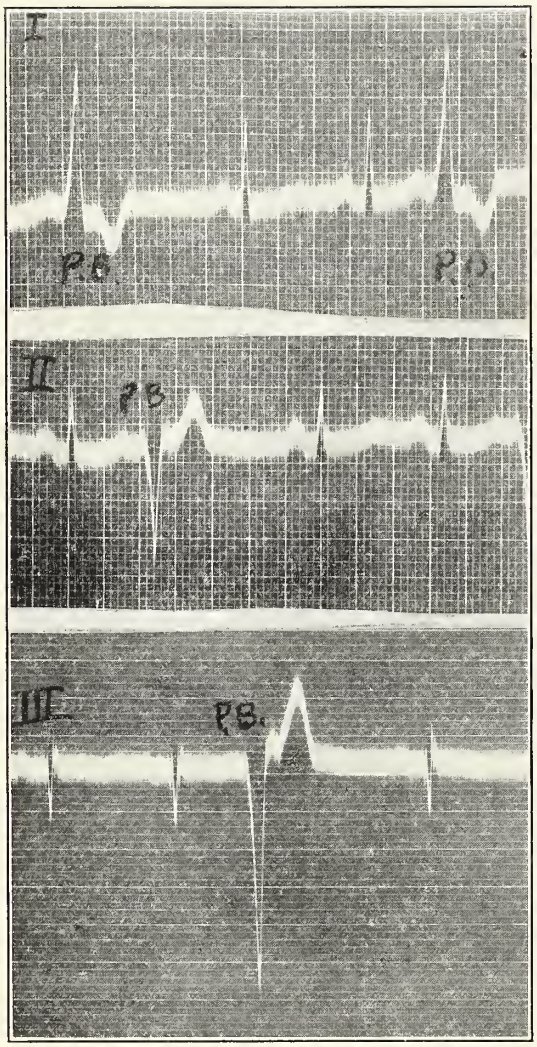

Fig. 3.—The "coronary T" wave is not to be confused with the inversion of the T which occurs without special significance in the case of premature ventricular beats. This record is from a patient with obesity, hypertension and arteriosclerotic heart disease.

The electrocardiogram showed left ventricular predominance, a QRS group which in Lead I was 0.12 sec. in duration, and only in Lead III an S-T convexity. With this amount of ventricular predominance as evidence of hypertrophy, the abnormal duration of the QRS group loses some of its significance, and the value of the S-T change in the third lead alone is questionable.

With reassurance and good sleep induced by bromides, this man regained at once a feeling of perfect well-being, and, with more attention to relaxation, has done well.

Comment

These histories have been cited to give background and perspective to the problems of the management of patients who survive the immediate effects of coronary thrombosis and give evidence of varying degrees of myocardial infarction. Other cases might be added to show that clear electrocardiographic, or even anatomic, evidence of coronary occlusion may be found where the history fails to suggest more than uncomplicated angina pectoris, or, in some cases, any symptoms or signs of heart disease.

Treatment

It is obvious that the treatment of these patients requires the utmost individual attention, but it may safely be stated, as a general guiding principle, that the earlier the diagnosis and the more adequate the protection from heart strain, the better is the opptrtunity for the repair of the damaged muscle and the recovery of the patient. There is an old adage regarding heart disease that applies well here: give the patient the best prognosis; treat him according to the worst.

Specifically, rest is the first essential in treatment; absolute rest during the active stage of infarction, and relative freedom from sudden and over-exertion later. I have found some patients walking the floor with the pain of coronary occlusion, but the bed is the safest place. For the agonizing, persistent, choking pain, morphine should be freely used. It is conceded sometimes to be life-saving. It relieves pain, lessens anxiety, and promotes sleep and quiet. Nursing care is important;—in the grave cases the necessity of the patient's feeding himself or going to the bathroom may be the extra exertion which decides the outcome. A light, but not necessarily liquid, diet is advisable; distention is to be guarded against and relieved by enemas, two tube irrigation being most suitable.

The use of digitalis is debatable, but I am convinced that it is best withheld until the need for stimulation clearly exceeds that for rest.

How long the patient should be kept at rest

is important and also debatable. "A few days in bed" is certainly not always sufficient, as in the case of the second patient, and, on the other hand, six weeks or six months are just as arbitrary periods. My own criteria for allowing the patient up after occlusion are much as they are in acute rheumatic heart disease: the maintenance of normal temperature and pulse levels, the subsidence of cardiac dilatation, and, in the case of coronary disease, the rise in blood pressure after an abnormal

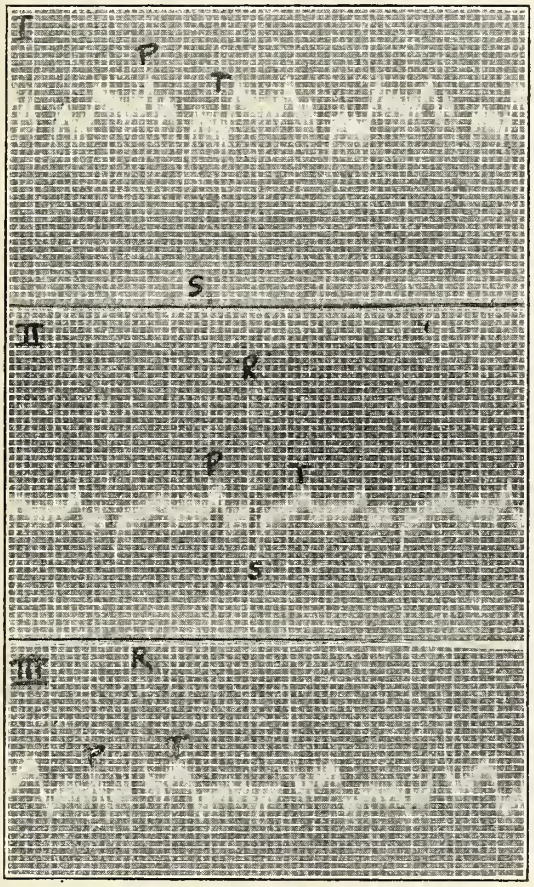

Fig 4.—An electrocardiogram taken two days after an attack of continuous substernal pain, suggesting occlusion. Man, age 56, blood pressure 190/124. There is right ventricular predominance. The P-wave is notched. The T-wave is atypical and diphasic in Lead I, and springs from the descending limb of R in Lead III.

hypotension. Graduated increase in exercise and observation of the cardiac response to effort should precede the return of the patient to the usual, or modified, routine of life and work.

The fact that persons with the smaller areas of infarction of the heart muscle escape without the lesion being recognized, or even giving rise to symptoms, should give encouragement, but not cause lack of caution in dealing with coronary occlusion and its structural and functional sequelæ.

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INFANTILE DIARRHEAS.

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The diarrheas occurring in infants and children are known under a great variety of names, such as summer diarrhea, cholera infantum, ileocolitis, infections diarrhea, fermentative diarrhea, gastro-intestinal indigestion, and many of the older writers refer to some types of it as "bloody flux".

In spite of the progress that has been made in the field of pediatrics in the past few years, summer diarrhea remains a formidable foe to the pediatrician. Its incidence remains high and its prevention and management present one of the most troublesome problems met with in pediatric work. Accurate statistics dealing with its frequency are hard to obtain. The most important reason for this is that most Health Boards only require that the infectious types be reported, which constitutes a small percentage of the cases, and many of the milder cases of the simple diarrheas are never seen by physicians. Wilkins, of Baltimore, has recently made a very interesting contribution to this phase of the subject. He kept 623 normal infants under two years of age under observation from June 1st to November 1st. 60 per cent of this group had no gastro-intestinal upsets during this period. 27 per cent developed simple diarrheas. 7.6 per cent had typical dysentery, and 5.3 per cent were border-line cases between simple diarrhea and dysentery. These studies were made on infants coming under the care of Child Welfare Stations, and probably show a somewhat higher incidence than would occur in private practice. In the last edition of Holt and Howland, they state that, for a five year period in New York city, there were 12,439 deaths from measles, pertussis, scarlet fever, typhoid fever and diphtheria, effecting all ages, and for the same period there were 13,351 deaths from diarrheal diseases in infants under two years of age.

Classification of Diarrheas

Many attempts have been made to reach a satisfactory classification of the disease, but at the present time there is apparently no satisfactory basis for an absolute differentiation

of the various types. In Davison's most recent article, he groups them under two heads: Group 1—"The various bacillary dysenteries", and the other types he refers to as "Ordinary diarrhoeas". Perhaps the most comprehensive classification for practical purposes is that of Hill, which is as follows:

Mechanical;

Fermentative;

Proteolytic;

Infectious.

The great majority of cases encountered in general practice may be grouped under one of these four heads. The fermentative and proteolytic types represent the large and motley group of unknown origin so far as the bacteriology is concerned. Attempts have been made to hold various bacteria responsible for this group, such as B. Welchi, B. Coli, and a putrefactive or fermentative flora, but these organisms have been found with equal frequency in the stools of perfectly normal children, and children dying from these types show no evidence of an inflammatory process involving the intestines. The term dysentery is usually applied to the infectious types and is associated with the passage of mucus, pus and blood (which usually comes on within the first 24 or 48 hours) and is accompanied with tenesmus. Simple or ordinary diarrhea is the term generally applied to the mechanical, fermentative and proteolytic types. The latter group is rarely accompanied by the passage of blood and pus and tenesmus seldom occurs. The differentiation between the simple or ordinary and infectious types may sometimes be difficult to make clinically as some of the severe cases of simple diarrhea may show mucus and blood in the stools, and some of the mild infectious cases may occasionally show little or no blood or pus.

Cultures are therefore essential in these cases if accurate diagnoses are made. Wilkins found bacillus dysenteriae in 90 per cent of his cases that were associated with the passing of blood and mucus. Zahorsky regards the cytology of the stool as an important aid in the diagnosis of border-line cases, and considers that liquid stools (diluted 2/3 with water) showing more than ten cells to the ordinary low power field as strong evidence of an infectious process. In the infectious types the Flexner organism is the one most frequently found (70 per cent) and produces the mildest symptoms. The Shiga organism is much less frequently encountered (10 per cent) and is much more serious. Ameba are rarely found in infants, but should not be overlooked as they do occasionally occur. The stools should be fresh and warm and examined on a warm slide if the ameba are suspected. Certain strains of streptococci are sometimes the only organisms found, while staphylococci are very rare, few authentic cases having been reported, and it is apparently a uniformly fatal type, being regarded as an accidental infection by most authorities. Saenz reports a case of spirochetal dysentery of 11 years' duration which had resisted all forms of treatment; spirochetes were found swarming in the stools. Neoarsphenamine effected a cure in two weeks. Typhoid and paratyphoid should be considered in these cases.

Diagnosis of the Different Types of Diarrheas

Mechanical: This type is rare in children under one year of age. There is usually a history of over-feeding or the ingestion of improper articles of foods or foreign bodies, such as paper, unripe fruits, etc. There is not usually much temperature in these cases, and there is little or no prostration. Abdominal pain is frequently a prominent symptom, and there may be nausea and vomiting. One should be very guarded in making a diagnosis of this type, as all of these symptoms may be present in acute surgical conditions.

Fermentative: This is by far the most frequent type encountered in infants, and has been estimated as constituting about 80 per cent of all cases. The stools are usually green and watery, acid in reaction, have a not unpleasant acid odor, and are quickly absorbed by the diaper. The buttocks soon become excoriated. The temperature may range from 100 to 105, vomiting is the rule, but may be absent in some cases. Dehydration develops rapidly and acidosis is often seen; frequently a history of a diet too high in carbohydrates is obtained.

Proteolytic: In this type the onset is not usually as abrupt. The bowel movements may not be as frequent but the toxic symptoms are usually more profound. The stools are brownish in color, alkaline or neutral in reaction, and the odor is very foul.

Infectious Types: The stools are not large, are usually acid, but may occasionally be alkaline (Shiga) and associated with the passage

of blood, mucus and pus. There is severe colicky pain preceding each bowel evacuation with severe tenesmus. The symptoms usually come on suddenly, but may sometimes follow what appears to be at first a simple diarrheal condition; a positive diagnosis rests upon laboratory findings. All cases associated with the passage of blood and pus are usually considered as dysentery or infectious diarrhea.

Treatment

Prophylaxis: Most measures falling under this head are applicable to all forms of diarrhea, so that this part of the discussion is meant to include all types of the disease. I shall not attempt to discuss the modes of transmission; indeed, very little is apparently known concerning this phase of the subject. Organisms of the infectious types have apparently never been found outside of the human body or human excreta. It is generally believed that food contamination is responsible in a large measure.

The two most important predisposing causes are, first, heat, and second, artificial feeding. The effect of heat, while not entirely understood, is an unquestionable factor in the causation of gastro-intestinal diseases. It apparently plays an important part in causing an over-growth of bacteria normally found in the gastro-intestinal tract. Arnold has made some very interesting observations on the effect of heat on dogs, using normal and fever dogs for the experiment. He found that the upper half of the small intestine was normally slightly acid in reaction and contained relatively few bacteria, the lower portion being neutral or alkaline in reaction, and containing a fecal type of bacteria. The stomach normally secretes acid into its lumen in order to acidify its contents, and usually in excess. When the contents of this part of the intestinal tract are slightly acid, something is produced by the healthy intact mucous membrane that causes the destruction of bacteria. He thinks it is probably a bacterio-static substance. He found that the gastric mucosa did not concentrate acid in its lumen when there was an elevation of internal temperature, and that the upper part of the small intestine was alkaline or neutral in its reaction. Bacteria fed to dogs in water did not appear in the cecum, but, when suspended in an alkaline solution, made their appearance in the cecum in less than an hour. The observations might suggest that the feeding of acidified milk to infants might have a tendency to diminish their susceptibility to summer diarrhea. Studies of the problem from this angle might prove helpful. It has been estimated that normally about thirty trillion bacteria are thrown off from the body during the 24-hour period. The estimated weight of the dried bodies of this enormous number is seventy-five grains. The depleting effect of heat is a strong causative agent in causing an over-growth of the intestinal bacteria normally present. It is obvious, therefore, that the infant should have every possible protection from the deleterious effect of heat. It is surprising how often infants are found to be over-clothed in hot weather—flannel belly bands, flannel skirts, etc.,—the mothers being guided in this matter by the advice of some mid-wife or "practical nurse," entirely losing sight of the fact that the infant is a human being with even a more pronounced susceptibility to the effects of overheating than is the case in the adult and should at all times be clothed according to the surrounding temperature without regard for the season of the year. Sudden chilling or undue nervous stimulation may affect the gastro-intestinal secretions in such a way as to cause a diarrhea.

Artificial Feeding: In spite of the advances that have been made along the line of artificial feeding, breast milk remains the ideal infant food, and has never been duplicated. Some idea of the protection that breast feeding gives the infant against gastro-intestinal disease may be gathered from the study of Wilkins' series. There was not a single case of dysentery in the breast fed group of his series, and no deaths occurred from gastro-intestinal disease. Only 10 per cent of the breast fed infants had gastro-intestinal upsets, against 50 per cent in the artificially fed baby. Davis has compiled some statistics which show that between 80 and 90 per cent of infant deaths between the ages of two weeks and one year occur in bottle fed babies, and that, of infants reaching the age of two weeks, one in five of the bottle babies die before they reach the age of one year, while, of the breast fed babies, only one in thirty fail to reach the one year mark. It is believed that the great majority of mothers can successfully nurse their infants. Minnesota carried out a breast feeding campaign in a certain area to prove this point, and reached

practically every mother in this area. The percentage of breast feeding ranged from 96 per cent at the end of the second month, to 72 per cent at the end of the ninth month. Every effort should be exerted to establish and maintain breast feeding, especially for the first summer. Putting the infant on the bottle in the first few months of life should always be regarded as a serious matter, and should receive very thoughtful consideration. When feeding difficulties arise at this age, one should be very certain that the food and not the baby is at fault before discontinuing the breast. The former is rarely at fault in the breast fed infant. However, the determination of this point is fraught with some difficulty, but can usually be arrived at if a careful study is given the case.

Over-Feeding: The infant actually requires less food in hot weather than in cold weather. Not so much energy is required to maintain the body heat and the effect of heat on the enzymes diminishes the infant's digestive capacity so that what is a normal well balanced formula for the infant under normal conditions may mean an excess of food when the above conditions obtain, so that it is always safe to cut down on the caloric intake during the very hot periods and no new foods should be added to the infant's diet under these conditions.

Immunization by vaccines given subcutaneously have been found to be of value in controlling epidemics of dysentery. Walker has attempted immunization by the oral administration of vaccines, but did not lessen the incidence by this method.

Active Treatment: The importance of the role played by parenteral infections, such as otitis media and mastoiditis, in the production of diarrheas should always be kept in mind. In such cases the eradication of such a focus frequently brings about a prompt recovery from the diarrhea. There are many therapeutic measures applicable alike to all cases. It would probably be better, however, to discuss some of the special measures to be applied to the different types first.

Mechanical Type: If one could be absolutely certain of the diagnosis of this type, a brisk purge, such as castor oil or milk of magnesia, might be justifiable. But ruptured appendices have occurred too frequently following such treatment for what was considered "green apple colic" to justify such a procedure except in very exceptional cases, so that "watchful waiting" with the withholding of food for a while and the administration of an anodyne, if necessary, is the safest treatment. Nature will do the rest, in this type of diarrhea.

Fermentative Type: Feeding is by far the most important therapeutic indication in this type of the disease. If there is much vomiting, it is often advisable to withhold all foods for ten to twelve hours, giving only water or very weak tea, sweetened with saccharine. Carbohydrates and fats should be withheld until there is a change in the character of the stools, which usually occurs in from forty-eight to seventy-two hours under appropriate treatment, and then should be gradually added to the formula. Protein milk is, as a rule, well taken. There are several reliable powdered protein milks on the market suitable for this purpose. Older infants sometimes have a distaste for these dilutions, and, when this is the case, boiled skimmed milk dilutions with casec (calcium caseinate) added and sweetened with saccharine will usually be well taken. One ounce (12 level tablespoonfuls) added to a quart of water will give a 3 per cent protein mixture. After two or three days, a part of the cream may be left on the milk, later using whole milk dilutions (preferably acidified), gradually adding carbohydrates after the stools have become normal in frequency. Excoriation of the buttocks may be a troublesome complication and demand some attention. Leaving the napkin down and allowing the air to come in contact with the inflamed area is, as a rule, all that is necessary. In severe cases it may be necessary to use locally calamine lotion or Lassar's paste.

Proteolytic Type: This type comprises a very small percentage of the total number of cases. Its recognition, however, is important, as this is the only type of diarrhea in which carbohydrate feeding is absolutely indicated. The distaste for food is profound. There is less dehydration than the other types of diarrhea. The toxic symptoms are very pronounced. A mild purge of milk of magnesia is perhaps permissible in this type of case unless the bowel movements are very frequent. Barley water with dextri-maltose or lactose added will usually bring about the change of intestinal flora and change the reaction of the stools in from twenty-four to forty-eight hours.

Fats and proteins may be gradually added as the condition improves.

Infectious Types: Feeding is less important in this type of case than in the others. The stools are acid in the majority of these cases. Protein milk is probably the best food for the first few days, later giving lactic acid milk, but the character of food given probably plays a small part, as the process, like many other infections, is self-limited and will run a course of from several days to several weeks in spite of treatment. Specific therapy of Flexner serum may prove beneficial if given early, but its real value is uncertain.

General Measures Applicable to All Types of Diarrhea: Vomiting is frequently a very troublesome symptom, and may be serious. The withholding of food for a brief period and giving water is all that is necessary in the majority of cases. If this fails, the stomach should be washed out, and fluids given through a tube are sometimes retained when not retained if administered by mouth. Absorption through the stomach is the most satisfactory method of administering fluids and should always be attempted. Failing in this, other methods have to be resorted to. Little or nothing can be administered by bowel as the intestinal tract is so irritable that it is usually expelled immediately. In the absence of abdominal distention, the intra-peritoneal route is the next method of choice. The advantages of this procedure over subcutaneous injections are that the procedure is less painful, can be done in less time, there is less shock, and there is a better retention in the blood stream. Blackfan found that when this method was used, 60 per cent of the fluid was absorbed in the first hour. The usual site for the needle puncture is the median line just below the umbilicus. The abdominal wall should be lifted up and the needle directed upward and slightly backward. There is little danger of puncturing the intestine unless there is great abdominal distention. From one to four hundred c.c. may be given at a time when this route is used. Gettings and Donnelly recommend twenty to thirty c.c. per pound of body weight. Saline or 3 to 5 per cent glucose may be given by this route, and may be repeated in twelve to twenty-four hours. If abdominal distention is present, it is safer to use the subcutaneous method. Not quite as much fluid can be given in this way, but the results are almost as good.

If ketosis, or acidosis, develops (a distinction that is hard to make clinically), glucose should be administered intravenously.

Tenesmus may be severe, especially in the infectious type, and treatment for this symptom may be demanded. Bowel irrigation with saline or sodium bicarbonate solution will often relieve this symptom. If this fails, injection of tannic acid solution (1 dram to the pint) may be used, or the injection of starch water and laudanum, or the use of a cocaine suppository (¼ grain for a child three years old) may be necessary to give relief. If there is severe abdominal pain, opiates may have to be given, but for the nervous symptoms which are so frequently present bromides will usually suffice.

The loss of mineral salts from the body is tremendous. Courtney and Fales found that sodium, potassium and chlorine make up 11.2 per cent of the ash in normal stools, and 48.7 per cent of the ash in diarrheas, so that the routine administration of an alkaline in all cases is a clinically safe procedure. Sodium bicarbonate, 10 to 15 grains every two hours, is perhaps the best. Brandy, ½ ounce well diluted in twenty-four hour periods, may prove helpful in some cases.

The so-called astringents are probably of no value. Green states that they are not needed in the mild cases and are of no value in the severe cases. The time-honored practice of giving bismuth is perhaps harmless and still has some adherents. The subcarbonate is perhaps the best preparation and may be given in fifteen grain doses every two or three hours. In more recent years the administration of bacterial cultures has been a popular practice. Recent investigations of the numerous preparations on the market have shown that the life duration of any of these cultures is short and may become worthless at any time. Bass sums up the result of his work along this line, as follows: "In the instance of tablets, none of those examined were found to contain more than a few viable organisms of any kind, and it is calculated that if all bacteria present had been bacillus acidophilus it would take about one billion tablets to contain as many bacteria as are contained in 1,000 c.c. of acidophilus milk". A questionnaire sent out by the Council on Pharmacy and Chemistry of the A. M.

A. to seven different investigators brought a unanimous reply that there was no evidence of intestinal implantation by the use of solid or semi-solid cultures. The Biologic Laboratory of the Bureau of Chemistry of the United States Department of Agriculture found the lowest count on solid cultures, and contaminating micro-organisms were common. However, the B. B. tablets appear to be widely used even at this time. Metchnikoff, with all of his enthusiasm for such therapy, admitted that he had never succeeded in changing the intestinal flora by the administration of bacillus bulgaricus.

The B. A. culture (liquid) appears more easily adopted to intestinal growth by implantation and is harmless in nature. The B. A. culture was approved by the Council on Pharmacy and Chemistry of the A. M. A. last year. The 120 c.c. vials were found to contain not less than 600,000,000 viable organisms to the c.c. at time of sale. The dose recommended for an adult was 15 c.c. twice daily, followed by lactose. There is, therefore, apparently some scientific justification for the use of the B. A. culture in diarrheal conditions. The writer, however, has not been impressed with the results obtained.

Blood transfusions are frequently indicated in some of the severe cases, particularly when the duration has been much prolonged. From 20 to 60 c.c. of blood per kilo of body weight is the amount usually recommended. Repeated intra-peritoneal injections of citrated blood has apparently given good results in some hands. Change of climate, tonics, and the administration of iron-conveying foods are indicated in all prolonged cases of any type.

BIBLIOGRAPHY.

Commercial Bacillus Acidophilus and Bacillus Bulgaricus Cultures and Preparations, Lawrence H. Jennings, Ph. D., New Haven, Conn. *J. A. M. A.*, July 9, 1927.
Host Susceptibility to Typhoid Dysentery, Food Poisoning and Diarrhea, Lloyd Arnold, M. D., Chicago. *J. A. M. A.*, Sept. 3, 1927, page 789.
Therapeusis of Intraperitoneal Injections in Infancy, Thos. E. Oast, M. D., *Virginia Medical Monthly*, December, 1924.
Reed: *Virginia Medical Monthly*, February, 1927.
J. A. M. A., Abstract, April 10, 1927, page 1168.
J. A. M. A., Abstract, February 20, 1927.
J. A. M. A., Abstract, April 3, 1926.
J. A. M. A., Abstract, page 157, 1926.
Cytology of Diarrheal Stools, John Zahorsky, M. D., St. Louis, Mo., *J. A. M. A.*, 1927.
J. A. M. A., Abstract, January 10, 1925.
J. A. M. A., Question, January 17, 1925.
J. A. M. A., Abstract, April 18, 1925.
Abt's Pediatrics, Vol. 3, Grulee, 372.
Porter and Carter.
Oxford Loose Leaf, Vol. 14, page 760, A. W. Sellard.
Holt and Howland, Eighth Edition.
Abt's Practical Medicine Series, 1925, page 108.
Kellogg Bulletin, Battle Creek Sanitorium, 1927.
J. A. M. A., Abstract, page 1150, April 9, 1927.
Chapin and Royster, 5th Edition.
Fischer, Vol. 1, page 18.
McIlwaine, *Virginia Medical Monthly*, August, 1926.
Ashworth, *Virginia Medical Monthly*, September, 1926.
Davison, *Southern Medical Journal*, May, 1928.

Medical Arts Building.

DIPHTHERIA CONTROL IN VIRGINIA—OCTOBER, 1926—MARCH, 1928.

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Before 1927 there had been no attempt on the part of the State Board of Health to carry out state-wide control of diphtheria by the use of toxin-antitoxin. The first local campaign in Virginia was held on Chincoteague Island, in Accomac County, in 1923. It was conducted by the State Board of Health, through its Department of Epidemiology, in co-operation with the county health officer of Accomac County and the physicians of Chincoteague Island. In this campaign over one-half the children on the Island were immunized, and, as a consequence, a marked reduction in diphtheria took place. From that time, although many school clinics were held throughout the State, no special attention was given to diphtheria control until June, 1926, when a county-wide campaign was put on in Brunswick County. Here over 4,200 were immunized on the first drive, and since that time the total has been increased to 6,500.

Beginning in January, 1927, a campaign was started by the State Board of Health through the Department of Epidemiology by holding county-wide clinics throughout the State. A publicity agent was taken on, and additional physicians and nurses were employed. At first, due to the fact that the personnel was limited, we confined our efforts to working up interest in counties, setting dates for the clinics and helping local doctors during the first week of each clinic. In this way forty-four counties were worked in and 44,700 children were immunized. The plan worked fairly well, and was used because personnel was limited and also because in many

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counties the physicians preferred to do the work themselves. These clinics were all pay clinics; in most cases a charge of fifty cents was exacted, which paid for the toxin-antitoxin and the services of the physician. The objections to this method are, first, that it is difficult for the doctors to keep the time of the schedule; second, that it is difficult to arrange the schedule satisfactorily to all the physicians; third, that it is very difficult to divide up the receipts from the campaign in a fair manner, and, fourth, the doctors—naturally, with other things to do—do not take the intense interest in the campaign that the State workers do.

The more satisfactory method is for the publicity agent to secure the consent of the physicians, then to enlist the support of the division superintendent of schools and, through him, the interest of school teachers. When these results are accomplished, the dates are set for the clinics. In our publicity we used pamphlets supplied by the State Board of Health and by the Metropolitan Life Insurance Company, posters supplied by the Metropolitan Life Insurance Company, advertisements in the local newspapers, and—most important—lectures and home canvassing carried out by the school teachers. It is hard to evaluate the merits of different forms of publicity, but it is felt the work of the superintendents of schools and the school teachers has been chiefly responsible for the success of our clinics. The time of the publicity agent was spent almost entirely in interesting the teachers and getting them to create an interest in the pupils and, also, in the homes throughout the county. This method was used in preference to the publicity agent attempting to arouse the interest of the children directly. In this manner forty-seven counties were worked in and 147,238 children immunized.

Below are given two tables showing the results attained by the two methods.

TABLE No. I.

COUNTIES IN WHICH THE LOCAL DOCTORS ADMINISTERED THE TOXIN-ANTITOXIN.

County	*School Attendance*	*No. Immunizations*
Alleghany	2,932	200
Amherst	3,259	600
Bath	1,173	300
Bland	1,208	800
Botetourt	3,020	900
Caroline	2,949	450
Carroll	4,472	3,500
Clarke	1,123	300
Cumberland	1,392	300
Dinwiddie	3,038	1,500
Essex	1,401	400
Floyd	3,636	500
Franklin	4,893	800
Frederick	1,744	300
Giles	2,601	1,200
Gloucester	2,121	800
Goochland	1,411	1,800
Hanover	3,194	800
Highland	899	200
King William	1,671	500
Lee	4,183	3,000
Louisa	4,056	500
Loudoun	3,271	350
Lunenburg	2,544	1,500
Madison	1,614	800
Montgomery	3,122	200
Orange	2,530	500
Prince Edward	2,512	700
Prince George	1,494	2,000
Prince William	1,983	2,500
Pulaski	2,950	1,500
Richmond	1,693	100
Roanoke	4,718	1,000
Rockingham	5,733	3,000
Scott	8,550	2,000
Shenandoah	3,688	1,200
Smyth	4,406	3,000
Stafford	1,099	350
Surry	1,710	350
Warren	1,490	1,000
Washington	5,928	2,000
Westmoreland	2,451	500
Wythe	3,608	300
York	1,445	200
	124,915	44,700

TABLE No. II.

COUNTIES IN WHICH THE STATE WORKERS ADMINISTERED THE TOXIN-ANTITOXIN.

County	*School Attendance*	*No. Immunizations*
Accomac	8,717	6,000
Albemarle	5,404	2,525
Amelia	1,583	2,500
Appomattox	1,684	1,500
Arlington	2,929	3,531
Augusta	6,209	4,000
Bedford	5,386	6,000
Buchanan	3,716	1,200
Brunswick	3,146	6,500
Campbell	5,026	3,000
Charles City	976	500
Charlotte	3,540	5,000
Chesterfield	3,672	4,000
Dickenson	2,972	6,500
Elizabeth City	3,901	2,500
Fairfax	3,515	400
Fauquier	3,508	2,400
Grayson	3,804	2,000
Greene	891	1,500
Halifax	8,290	6,000
Henrico	3,728	3,000
Henry	3,664	2,500
Isle of Wight	2,428	500
James City	641	1,000
King George	616	500
Louisa	3,056	2,000

County	School Attendance	No. Immunizations
Mathews	1,397	500
Mecklenburg	5,314	8,000
Nansemond	4,110	1,500
Nelson	2,741	2,000
New Kent	931	1,000
Norfolk	5,872	1,000
Northampton	2,970	3,000
Nottoway	2,717	3,000
Pittsylvania	12,263	10,000
Page	2,414	1,500
Powhatan	1,029	1,200
Princess Anne	2,373	1,200
Rappahannock	1,194	1,200
Rockbridge	3,352	2,000
Russell	5,335	6,500
Southampton	4,027	5,000
Spotsylvania	1,897	2,500
Sussex	2,114	282
Tazewell	5,537	6,000
Warwick	1,065	800
Wise	10,034	12,000
Totals	171,988	147,238

Table No. I shows the records from forty-four counties. In these counties a charge of fifty cents was exacted, and the local physicians administered the toxin-antitoxin. The total school attendance of the forty-four counties was 124,915. The total number of children, school and pre-school, immunized was 44,700. If we use the school attendance as an index by which to measure the success of our clinics, the total number of children immunized in this group was 35.7 per cent of the total school attendance.

Table No. II gives the record for forty-seven counties. In most of these counties a charge of fifteen cents was exacted, a few were free, and in some twenty-five cents was charged. The total school attendance of the forty-seven counties was 171,988. The number of children immunized was 147,238, or 85 per cent of the school attendance.

A comparison of these two tables leaves no doubt as to the method to be preferred. Publicity was the same and the same amount of time was spent in creating interest in each type of clinic. If it is possible, it is much better to conduct free clinics and to have the clinics conducted by State workers.

The clinics were conducted in the schools. The co-operation of the State Department of Education was assured before the campaign was launched. The Schick test was not used nor did we promise that the children could be Schick tested at a later date. The object of the campaign was to attain the maximum reduction of diphtheria at a minimum cost. With this object in view, toxin-antitoxin was administered without Schick testing; but it was always our aim to immunize the lower age groups of children. It is felt that it would have been much more difficult to reach the pre-school children by any other method than working through the schools. Below is shown a study of twenty-seven counties taken at random, giving the age grouping of children immunized.

Counties	Under 5	5-9	10-14	Over 14	Age Not Stated	Total
Amelia	281	866	922	215	58	2,342
Amherst	49	225	182	75	10	541
Appomattox	32	91	65	26	297	511
Caroline	26	116	120	25	16	303
Carroll	452	1,039	1,110	583	228	3,412
Charlotte	554	1,429	1,490	547	773	4,793
Chesterfield	108	893	1,030	144	523	2,698
Dickenson	1,718	2,199	1,844	450	38	6,249
Dinwiddie	91	308	308	70	--	777
Goochland	33	236	345	107	106	827
Grayson	555	750	588	76	--	1,969
Hanover	28	170	237	57	230	722
Henry	56	923	1,020	274	147	2,420
King George	32	197	193	37	14	473
Lee	610	1,329	1,126	154	261	3,480
Mecklenburg	1,241	2,275	1,990	479	321	6,306
New Kent	64	343	402	117	2	928
Pittsylvania	909	3,522	3,468	958	383	9,240
Prince William	191	766	923	293	38	2,211
Rappahannock	69	313	425	117	242	1,166
Roanoke	55	159	103	6	45	368
Rockingham	228	822	822	102	72	2,046
Russell	989	2,392	2,232	553	159	6,325
Scott	275	544	330	16	14	1,179
Smyth	288	1,000	989	161	354	2,792
Spotsylvania	29	101	118	45	800	1,093
Washington	64	313	334	52	24	787
	9,027	23,321	22,716	5,739	5,155	65,958

Total number immunized	65,958
Number under 5 years	9,027
Number 5-9 years	23,321
Number 10-14 years	22,716
Number over 14 years	5,739
Age not stated	5,155

% under 5 years	13.7
% 5-9 years	35.4
% --9 years, incl.	49.1
% 10-14 years	34.4
% --14 years, incl.	83.5
% over 14 years	8.7
% age not stated	7.8
Total	100.00

Of the total of 70,672 children who came to the clinics, 4,714, or 6.7 per cent did not complete the course of treatment. Weather conditions was the chief cause for the children not finishing treatment. Most of these clinics were conducted during the winter. A few children refused to complete the treatment on account of the reaction from the first dose.

Method of Conducting Clinics

In those clinics conducted by the State, the doctors or nurses administered the toxin-antitoxin. No nurse, however, was allowed to administer toxin-antitoxin until she had been under the supervision of a State physician for sufficient time to make herself thoroughly acquainted with the technique. Every effort was made for speed and efficiency, although careful sterilization of needles and syringes was carried out. The needles were sterilized in some cases by boiling, but in most instances by immersing in absolute alcohol, as it was found that repeated boiling dulled the needles and made them very brittle. The syringes were boiled before the clinic started. Ten c.c. record syringes were generally used and 26 gauge, ½ inch needles. The arms were sterilized with tincture of iodine or absolute alcohol. We had no record of an infected arm. The clinicians and nurses were instructed to administer toxin-antitoxin intramuscularly, the deltoid muscle, as a rule, being used for this purpose.

Each worker traveled alone. The school teacher very willingly took the records, lined up the children, painted the arms with iodine, in some cases changed needles, and wiped off the arms with absolute alcohol following the administration of toxin-antitoxin. In this way the work was materially speeded up and it was not unusual for one worker to visit from eight to twelve schools in one day, and to immunize from 500 to 1,000 children daily.

Record forms were distributed to the teachers in all the clinics; they were asked to note the name and age of the child, the date of the injections, and also to make records of any unusual reactions. The keeping of records was the only unsatisfactory feature of the campaign. No matter how much care and time was taken to explain to the teachers, both white and colored, what we required in the way of record keeping, the records as a whole were not well kept. A study of all records shows that in a high percentage no ages were given, and that the dates of receiving the toxin-antitoxin were not properly checked. To have satisfactory and accurate records of such a campaign, it would be necessary to supplement the staff by a person who has no duties other than to keep records.

The clinics were held almost exclusively in the rural sections. The cities have health departments and conduct their own campaigns. Below is given a table showing the number of children immunized in the various cities previous to and during 1927.

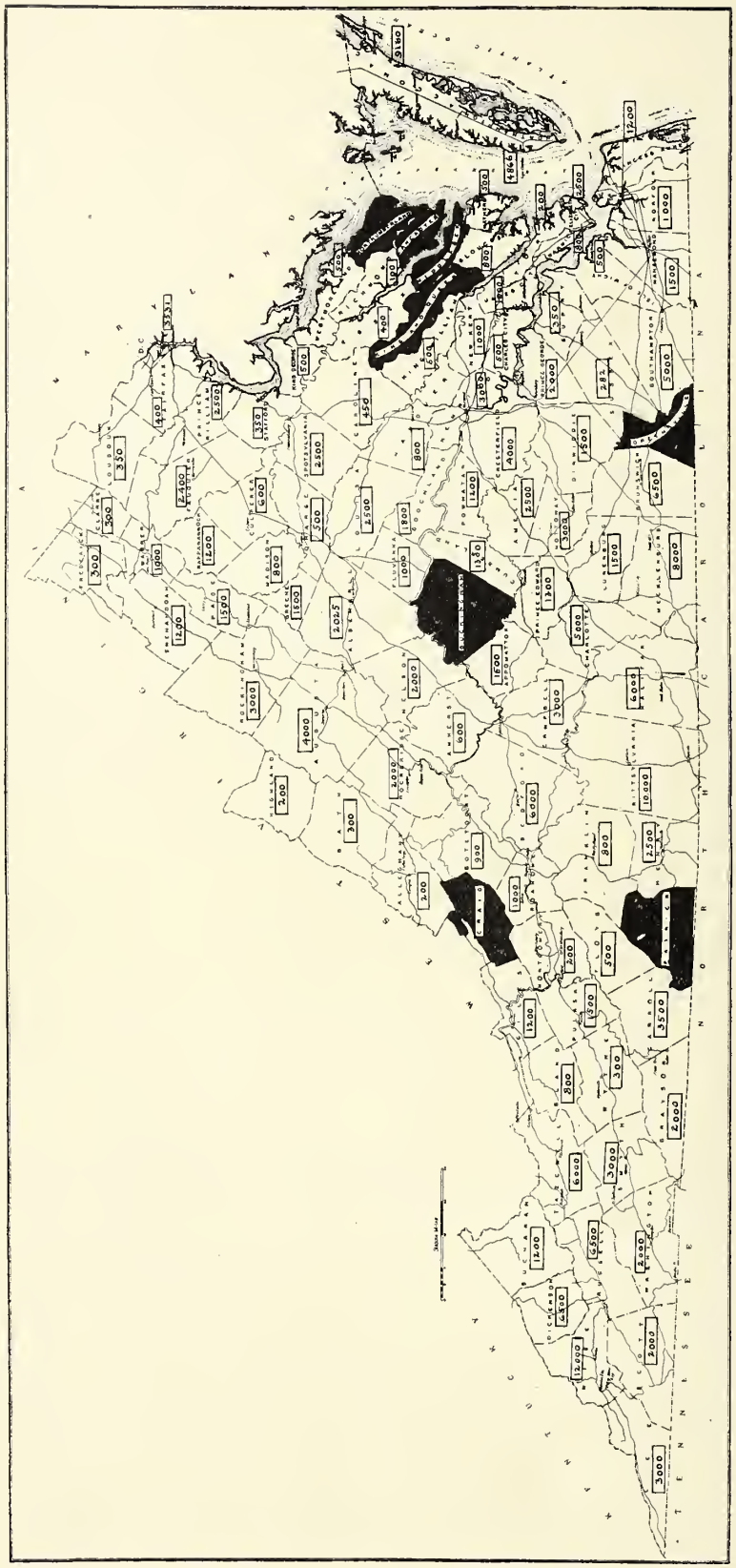
TOXIN-ANTITOXIN IMMUNIZATIONS IN CITIES OF VIRGINIA.

	Previous to 1927	1927
Alexandria	2,800	1,000
Richmond	6,659	3,042
Newport News	2,030	1,501
Petersburg	1,500	600
Lynchburg	1,000	496
Harrisonburg	288	373
Roanoke	2,200	800
Norfolk	12,316	2,569
Fredericksburg	120	765
Danville	266	785
Staunton	0	0
Winchester	0	1
Portsmouth	826	817
	30,005	12,749

DIPHTHERIA DEATHS AND RATES.

	1921	1922	1923	1924	1925	1926	1927
			Cities				
Deaths	64	70	60	45	50	49	31
Rates	10.6	11.5	9.2	6.8	7.4	6.9	4.1
			Counties				
Deaths	335	393	277	171	188	179	111
Rates	19.2	22.3	15.8	9.7	10.6	9.9	6.0
			State				
Deaths	399	463	337	216	238	228	142
Rates	17.0	19.5	14.1	8.9	9.6	9 1	5.5

The clinics were held almost exclusively in the rural sections and principally during the fall and winter months. Owing to the fact that many of the smaller schools opened late in October and closed early in April, it was necessary to schedule much of our work dur-



TOXIN-ANTITOXIN CLINICS IN VIRGINIA
October, 1926—March, 1928.

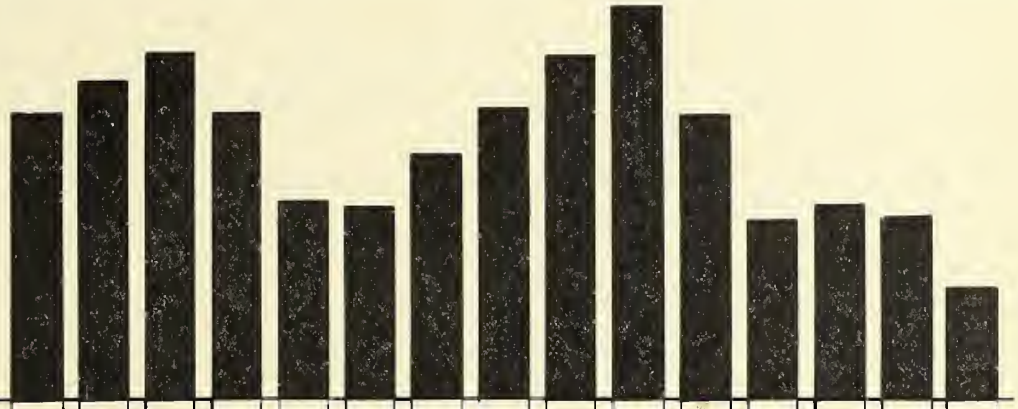
The blocked numbers represent the number of children immunized. Counties in black have not held clinics during time reported.

ing the winter months in order to visit the schools during the session. The rural schools are, as a rule, on unimproved roads which, during rainy weather, become almost impassable. During bad weather our workers were greatly hindered by the condition of the roads. This factor also influenced the attendance at the clinics, as the school attendance was very poor and very few mothers brought the pre-school children. During rainy weather our workers were often forced to ride horse-back, or walk, in order to reach their clinics. One worker doing a day's schedule walked ten miles, rode horse-back several miles up the mountain side, besides having the car towed several miles through clay roads. This, of course, meant that more workers were required to carry on the clinics. As a rule, we scheduled all of the schools through one week. This meant that our workers remained through three weeks, in order to administer three treatments to each child. In spite of unfavorable weather conditions and poor roads, our workers were able to complete their schedules, and in no county were they forced to discontinue the work.

After our first few clinics, we always gave four weekly dates to one community, as it was noticed that by doing so the number of children receiving the treatment was increased anywhere from 25 to 50 per cent.

It was our plan to put on a county-wide diphtheria prevention clinic in each of the one hundred counties in the State. By March, 1928, although the objective was not reached, county-wide clinics were held in ninety-one counties and 191,938 children had been immunized, exclusive of the work done in the cities. The work is still in progress.

It was surprising the interest in this effort to control diphtheria. After the campaign was under way for a month or two, we at all times had more requests for clinics than we could handle. Our only difficulty was to secure sufficient funds and personnel. The county superintendents of schools and the teachers throughout the State, the physicians, and the ministry all took an active part in the work; and most of them have expressed willingness to conduct future campaigns of a similar nature. Several counties have conducted a second successful campaign, and many others are planning now to put on a second series of clinics. In the few counties which have so far conducted their second campaigns, the results have been very gratifying. The percentage of pre-school children in the second campaign is much larger than that of the first. It is felt that the first campaign had a decided educational value for the mothers of the counties, and was responsible for their bringing the smaller children to the school clinics.



Year	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Deaths	302	340	374	316	221	216	278	334	399	463	337	216	238	228	142
Rate	14.2	15.8	17.2	14.2	9.8	9.5	12.1	14.4	17.0	19.5	14.1	8.9	9.6	9.1	5.5
Estimated Cases	5146	5734	5546	6777	4059	2909	3065	4958	7760	8735	5249	3786	3639	4040	3489

STATE OF VIRGINIA.

Annual Death Rate from Diphtheria per 100,000 Population.

Herewith is shown a map giving the counties worked in and the number of children immunized.

Cost of the Campaign

The cost was approximately $35,000.00 to the State. It is estimated that where the local doctors administer the toxin-antitoxin the cost to the State runs about ten cents per child; whereas, where the State workers do everything, the cost runs higher, probably from twenty to twenty-five cents per child.

Results of the Campaign

It is not fair to claim too much for this one year's campaign against diphtheria. *The records for* 1927 *show a reduction in cases of* 18.4 *per cent and a decline in deaths from diphtheria of* 38.1 *per cent over the year* 1926. A study of the chart given below shows us that similar reductions have taken place in years when toxin-antitoxin was not used extensively. The year 1917, for instance, shows a reduction in deaths from diphtheria from 316 to 221, or 30 per cent less than 1916. So, also does 1923 show a marked reduction over 1922, and 1924 over 1923.

In view of the fact that diphtheria increased generally throughout the United States during the year 1927, and also that there are now in Virginia over 250,000 children immunized with toxin-antitoxin, the assertion seems justified that the marked reduction of 1927 over 1926 in deaths from diphtheria was chiefly due to the widespread use of toxin-antitoxin. Virginia for 1927 shows a rate of 5.5 deaths per 100,000 population from diphtheria—the lowest in her history.

This work of the State Department of Health will be continued by a voluntary organization, the Anti-Diphtheria League of Virginia.

INFECTED TONSILS AS A FACTOR IN THE ETIOLOGY OF RHEUMATISM.*

By MEADE EDMUNDS, M. D., Petersburg, Va.

The writer realizes that there are two very vague and indefinite terms in the title of this paper, namely, rheumatism and infected tonsils, both of which are often used loosely by the laity and by the profession as well. Discussing the subject of infection in the tonsils is something like discussing religion, for we never seem to get very far. After all, it is no easy matter to say when a tonsil is infected, and if we do arrive at such a conclusion, by what signs and symptoms have we done so? If there is a history of attacks of acute tonsillitis, we are certainly justified in assuming that the tonsils may be the focus of infection. On the other hand, the absence of such attacks does not by any means exclude the possibility that the focus may still be located in these organs. The most difficult cases to size up are the adults who can give no definite history of attacks of tonsillitis, but who have some remote pathology, the cause of which we think is due to some focal infection.

Enough clinical evidence has accumulated to prove beyond a doubt that a chronic focus of infection in the tonsils may give rise to general systemic disorders, so that a discussion of this point would seem useless. On the other hand, it is quite timely and proper to ask ourselves why and how a focus of infection does produce remote systemic disorders, and why is it that in one individual it may cause an arthritis, in another an iritis, in still another an endocarditis, and so on.

Since this is part of a symposium on rheumatism, we will take for example acute articular rheumatism, or one of its twin brothers, chorea or endocarditis, and attempt to show how a chronic focus in the tonsils could be a factor in its etiology. There are two possible explanations to account for such lesions being located remotely from the original focus of infection; one is the absorption of toxins from the primary lesion and the other is the passage of living bacteria from time to time into the blood stream and their localization in the part affected. Now, which of these factors are more frequent? I venture to say that if an expression of opinion on this point were obtained from each of you, that the vast majority would say the absorption of toxins rather than the passage of bacteria into the blood stream. However, enough experimental work has been done to prove that a chronic or an intermittent bacteriemia is not at all uncommon. Tanaka and Crowe,[1] from the department of pathology of Johns Hopkins University, in a paper entitled, "Direct Blood Stream Infection Through the Tonsils," say that the clinical evidence that systemic disturbances secondary to chronic tonsillitis are often due to the localization of bacteria in the affected part is supported by the following facts: "That the epithelium

*Read before the Southside Virginia Medical Association, at Suffolk, March 13, 1928.

which lines the crypts in a normal tonsil has a very rich blood supply and that the large collecting veins which surround each crypt lie just under the basement membrane. A destruction of this epithelium, in whole or in part, is the most common microscopic finding in chronic tonsillitis. Often this lining epithelium is replaced by scar tissue and occasionally definite ulcers may be found. In either case large numbers of blood vessels have become thrombosed and afford a pathway for the entrance of bacteria into the blood stream." Dr. William S. Baer and Walter Baetjer have succeeded in a large series of arthritic cases in recovering hemolytic streptococci from excised lymph glands, and suggest that bacteriemia is not uncommon. Ballenger,[2] in a paper, "Bacteriemia Associated With Acute Hemolytic Streptococcic Throat Infections," believes that direct infection of the blood-stream is the most important route by which the hemolytic streptococcus is conveyed from its primary focus, whether of the acute or chronic type, and says further that a chronic bacteriemia can most plausibly explain the term subinfection as used by Adami.

The frequency of cardiac involvement following acute infections of the throat is strongly suggestive of the passage of bacteria into the blood-stream. Brenneman[3] has called attention to the frequency of abdominal pain in children in throat infections and suggests the probability of a blood borne infection to the mesenteric and retro-peritoneal glands. Granting, then, that the passage of bacteria into the blood-stream from a chronic focus does occur, and occurs much more frequently than we often suspect, why do they in one individual produce arthritic changes of acute nature, in another of a chronic nature, in others no joint changes at all, but an iritis, a pyelitis, a chorea, an endocarditis, or possibly no symptoms whatever? Who among you could say definitely that you are not having at times or have had bacteria pass intermittently into your blood-stream with no or only slight manifestations? The reasons for such phenomena as these can best be explained, I believe, on the following grounds, namely, the resistance of the individual and the virulency and the elective affinity of the bacteria. If the amount of toxins or microorganisms is small and immunity well established, symptoms will likely be absent. On the other hand, symptoms appear when the infection in the tonsils increases, local resistance decreases, or when immunity is lessened by any intercurrent acute disease, physical or mental stress, poor nutrition, anemia, or from unknown causes. Just as certain drugs are selective in their action, for instance, digitalis is selective for heart muscle, belladonna for involuntary circular muscle, so likewise bacteria and their toxins possess selectivity. Rosenow has shown the development of certain ulcers of the stomach and duodenum to be the result of a specific localization of bacteria. He cultivated bacteria from such tissues and injected them into the blood or peritoneum of animals and found them to be selective for similar tissues and with like results. This characteristic of bacteria, namely, elective affinity or selectivity, in conjunction with their virulency and the resistance of the individual, will explain, I believe, the many different manifestations which occur remotely from the original focus, whether it is in the tonsils, teeth, nasal accessory sinuses or elsewhere.

The removal of tonsils has been widely practiced in recent years, and the reasons for their removal are numerous. However, it has been very difficult to get a statistical report of a series of cases sufficiently large to justify very definite or scientific conclusions as to the benefits derived therefrom or the effect on the incidence of such diseases as rheumatism, endocarditis and chorea. Kaiser[4] has recently published a paper entitled, "Incidence of Rheumatism, Chorea and Heart Disease in Tonsillectomized Children," based on a control study which certainly gives some valuable information, and is based on a sufficiently large number of cases to be of real scientific value. He made a survey of 48,000 school children, in 20,000 of whom the tonsils had been removed and 28,000 of whom they had not. The majority of the 20,000 had had their tonsils removed for a period of five years. He says that the tonsillectomized child not yet infected has a much better chance to escape rheumatic infection over the same period of time than the child whose tonsils have not been removed. In those cases who had rheumatic infection prior to tonsillectomy, recurrent attacks were less frequent than in the unoperated group. Rheumatic heart disease was found in 450 of the 20,000 operated on, and in 817 of the 28,000 who were not, but he calls attention

to the fact that, of the 450, many of them had the heart disease prior to the operation. A careful analysis of 478 cases of carditis showed that 83 per cent developed the condition before tonsil removal and 17 per cent following tonsillectomy. Kaiser, in his final conclusion, says this: "Based on a control study of 20,000 tonsillectomized children it must be concluded that the tonsil is a factor in the causation of rheumatism, scarlet fever and chronic heart disease, and the tonsillectomized child is assured greater protection against these infections than his companions whose tonsils have not been removed."

Figures from the United States Army, dealing with adults, show that the incidence of tonsillectomies has increased among the men admitted from 3 per cent in 1913 to 17 per cent in 1925, while the incidence from rheumatic fever has declined during that same period from 6 per cent in 1913 to 1.1 per cent in 1925. These figures show very definitely the relation between infection in the tonsils and the rheumatic syndrome. Kaiser's paper particularly shows the importance of removing foci of infection before the development of rheumatism and endocarditis, and also brings out the fact that tonsillectomy is no safeguard against recurrent attacks of rheumatism when the patients have had rheumatism prior to the operation. Therefore, the lesson to be learned is prevention. Any manifestations in a patient which point to a rheumatic syndrome, particularly if following frequent sore throats, justify tonsillectomy, in my opinion, regardless of the appearance of the tonsils, provided, of course, there are no other outstanding or definite foci of infection. In other words, I do not feel that one can say very much about the amount or character of the infection by examining the throat, and I think this is the least important part of the examination in determining the advisability of removing tonsils. What is far more important is a careful history, particularly in regard to sore throats, and the exclusion of other possible foci of infection, including a thorough physical examination by an internist. After this is done, then I believe one is justified in removing the tonsils regardless of how they look, if we feel reasonably certain that the condition from which our patient is suffering is due to a focus of infection, and if we do not promise the patient too much. This applies especially to adult cases, for it is very important that a correct diagnosis be made; otherwise, both the operator and patient will be disappointed in the end results. On the other hand, the situation in children is somewhat different. I believe too many adults are having their tonsils removed and too few children. In other words, I think many of the adult cases are not studied thoroughly, incorrect diagnoses are made, and no improvement results from tonsillectomy, because the tonsils were not at fault. With children it looks as if the opposite condition prevails; many who are having throat symptoms are allowed to go on, operation is postponed because somebody wants the child to be ten, twelve or fourteen years old before being operated on, and, in waiting, many of these cases develop rheumatism and chronic heart disease. I believe that tonsillectomy in children who have shown any indications whatever of infection in these organs, is almost as important from the public health standpoint as the administration of toxin anti-toxin and typhoid inoculation. If the incidence of rheumatism, chronic heart diseases, and scarlet fever is reduced to the extent as shown in Kaiser's study, why then is this not true? I am of the same opinion as a prominent pediatrician who said, in discussing heart disesae in children, "No child should ever be allowed to have but one attack of tonsillitis," and I am almost ready to say that no child should ever be allowed to have even one attack.

References.

1. M. Tanaka and S. J. Crowe: Direct Blood Stream Infection Through the Tonsils. *Archives of Otolaryngology*, Vol. 1, No. 5, May, 1925.
2. Ballenger, H. C.: Bacteriemia Associated with Acute Hemolytic Streptococcic Throat Infections. *Archives of Otolaryngology*, Vol. 4, No. 2, August, 1926.
3. Brenneman, J.: Abdominal Pain of Throat Infections. *Amer. Jour. Diseases Children*, 27-493, November, 1922.
4. Kaiser, A. D.: Incidence of Rheumatism, Chorea, and Heart Diseases in Tonsillectomized Children—A Control Study. *Jour. A. M. A.*, Vol. 89, No. 27, December 31, 1927.

POST-OPERATIVE CARE.*

By HARRY HYLAND KERR, M. D., C. M., Washington, D. C.

The remarkable advance of surgery in the past generation has developed along three general lines. First, the epochal discovery of the cause and the prevention of sepsis by the immortal Lister opened the field and made pos-

*Read at the Roanoke meeting of the American College of Surgeons, January, 1928.

sible all modern surgery. Infection had prevented all but the absolutely essential operations. Its control robbed the actual surgical intervention of much of its danger and allowed operative manipulation in an ever-widening sphere of disease. Daily we see conditions, only a short time ago considered purely medical, come under the surgeon's knife.

Secondly, the elaboration of technique that has gone on with the other improvements in the science of surgery has gradually extended the field to all parts of the human anatomy. Today there is no cavity or corner of the human body that has not been exposed in the living patient.

Finally, the researches of surgery have advanced our knowledge of human physiology so that today surgery has broadened its field and is often truly prophylactic in its application. Thus, from the mere care of wounds and injuries in its earliest days, surgery has advanced through devious pathways to the heights of the healing art. To surgery belongs the credit of bringing to light many of the truths of other branches of medicine.

But with this glorious record and the promise of more triumphs in the future we, as humble doctors, must not forget that, after all, the individual patient is our main responsibility and our chief duty.

It is with the idea of reviewing some of the homely lessons that do so much for our patient's comfort and safety that I thought it worth while to talk a brief time of their care after operation.

The comfort and safety of the patient is, of course, predicated on the condition before operation and the seriousness of the operative interference.

For the simple elective operations, in the comparatively healthy individuals, proper preparation and gentle surgery insures a convalescence with little suffering and a rapid return to normalcy. I am a strong believer, even in such cases, in the inhibition of anodynes and hypnotics and the early administration of fluids either orally, rectally, subcutaneously or intravenously. The picture of the poor patient refused any water or morphine after operation is a pitiful sight, thankfully no longer seen in our surgical wards.

Sleep is a great restorer. There is no time it is more needed than after operation and there is no better way to produce it at this time than by the use of morphine hypodermatically. The injection of one-sixth of a grain of morphine at the termination of operation during the closure of the wound is far better than waiting till the patient's discomfort demands it, even if it has been already used in the preparation. We should not hesitate to give morphine in adequate doses for the first three post-operative days. For our patient's comfort there is no more important therapeutic weapon at our command to combat the physical and mental suffering.

For their actual well being during this time, water is most needed. The great solvent should be freely administered in any and every way possible. But do not forget that though larger quantities of water may be given by bowel or vein, repeated sips by mouth do more to allay the thirst.

The great need after operation is water, but certain solutions are indicated under varying conditions. Thus, in cases of partial or complete bowel obstruction, the post-operative fluid should be hypertonic salt solution given by vein to correct the diminished chlorine content of the blood. In cases of acidosis following prolonged vomiting or starvation, the fluid given after operation should be glucose in appropriate percentages. After thyroidectomy for exophthalmic goiter, Lugol's solution in the intravenous or rectal fluid helps to counteract the wave of thyrotoxicosis that follows operation. The great need is fluid, but the fluid should be selected for the individual case in its mode of administration, its quality, and quantity.

In many operations the movement of the diaphragm is interfered with and the respiratory excursion thereby restricted with always the danger of pulmonary congestion. It is, therefore, necessary that the patient be passively rolled first on one side and then on the other every few hours after recovery from an anesthetic. In this way, venous drainage of each lung is assured and the dangers of pulmonary complications are markedly reduced.

From these general considerations let us look at the problems of the possible complications in the surgery of the various regions of the body.

Cranial surgery, the youngest child of her glorious mother, is fraught with great diffi-

culties and relatively high mortality. It has been by the management of the post-operative period in cranial surgery that its advance has been encouraged. The necessarily long operations in this field are accompanied by more than usual shock. Transfusion stands out as the best therapeutic measure for this condition. The collection of the patient's own blood by a suction apparatus may permit transfusion of his blood that has been lost, or the administration of whole or citrated blood during operation should be used freely. No craniotomy should be begun without provisions for a transfusion. The control of intra-cranial pressure by the administration of hypertonic solutions, both before and after operation, has been a great boon. Hypertonic glucose solution produces the most lasting effect and has the additional advantages of supplying nourishment at this time.

In thoracic surgery, pulmonary collapse must be guarded against. In clean thoractomies, pulmonary distention during closure will often suffice, but the possible accumulation of fluid should be immediately aspirated and the aspiration repeated as often as necessary. Posture is of tremendous importance immediately after operations in these cases. Later, during active convalescence, breathing exercises and calisthenics are important to restore lung function to its maximum.

Massive collapse of the lung is a complication that may arrive following any operation or even trauma. Its early detection and relief may be of vital importance. In all doubtful cases the X-ray will be diagnostic.

Abdominal surgery now occupies the forefront and represents the bulk of the major cases in our operating rooms. Adequate preparation has done much to simplify the post-operative care in these cases. The discontinuance of the old purgation the night before operation and abundance of carbohydrate food and fluids the day before has made the immediate convalescence much more comfortable. The exhibition of a soporific the night before operation is appreciated by the nervous patient.

After abdominal operation the semi-sitting position and the immediate administration of water by drip or subcutaneously with morphine administered during wound closure will allow the patient to pass the first post-operative period in comparative comfort.

The managment of that great bug-bear, "gas", is also much simplified by adequate preparation. Even the simplest abdominal section will be accompanied by peristaltic paralysis, lasting forty-eight hours or more. During this time it is useless to "beat the tired horse up the hill" with enemas or purgatives. The bowel should be given perfect rest till it has recovered its tone, and then emptied only by enemata. Loosenisg the adhesive binding and the insertion of a short small rectal tube to allow the escape of gas trapped in the rectum will bring relief till the stethoscope tells us that peristalsis has sufficiently recovered to respond to a rectal injection.

Distention must not be misjudged, however. One cannot afford to let precious hours slide by by failing to diagnose post-operative obstruction. Here the stethoscope is of immense value. It will detect the high pitched tinkle of the obstructed loop before it can be found or localized by any other means save the fluoroscope. Prolonged vomiting and unusual cramp-like pain should make us suspect ileus and put us on our guard. High enterostomy under local anesthesia is life saving in such cases and should not be delayed.

In pelvic surgery the question of urinary retention must be considered. It is unwise to catheterize the urinary bladder unless it is necessary. There is nothing more distressing to the patient than a prolonged cystitis following what may be a simple operation. Catheterization should be delayed long enough to allow possible exciting reflex stimuli to subside or the muscular tone to return. It is far safer to sit our patients up passively than to run the risk of cystitis.

For surgery of the extremities, proper splinting and position are of paramount importance. With the limb splinted in the position of rest and elevated to secure good venous drainage, the patient should not suffer unduly. Great pain after the reduction and setting of fractures means trouble. One must keep in mind the possibility of ischaemic paralysis and not ignore the crying of the child or complaining of the adult. Early mobilization after proper reduction was advocated many years ago by Championiere, but many modern surgeons still fail to appreciate the reduced morbidity ob-

tainable by guarded early mobilization, massage and passive motion.

If our surgery has been properly done and our care after operation adequate, we should be able to correct many of the ills that flesh is heir to with safety and comfort. To the world at large surgery is appreciated for what it has done, but feared for the pain and suffering it entails. A valuable step in advance will be the lessening of this pain and suffering.

1744 *N Street.*

ABORTION.*

By CHARLES H. LUPTON, M. D., Norfolk, Va.

The term abortion as used in this paper will include the termination of pregnancy prior to the viable period, that is, prior to the 28th week.

Etiology

Many varied causes are thought to play a part in the etiology of abortions, but the most common causes are either abnormalities of development of the foetus or mother, or diseased conditions of the mother or foetus. According to most of the reports in the literature, it appears that defective development of the early embryo or foetus, whether resulting from the ovum or spermatozoon, plays a very important part in the causation of a large number of abortions. Macomber classifies the causes of abortions as follows: defective germ-plasm (may be either maternal or paternal); mechanical, and nutritional. He also states that abortion is twice as frequent when fertility is known to be low. Huntington, reporting on 39 cases of abortions, stated that 21 were due to defective germ-plasm, and that 3 others were probably due to defective germ-plasm or to arrested development due to retroversion.

It is known that faulty position or mal-development of the uterus has a de nite relation to the causation of a number of abortions, retroversion being a fairly common cause of abortion. Abortion occurs more frequently in multiparas than in primiparas. There is a condition termed habitual abortion, that is, when women will abort and no abnormality can be found. It is probable that either defective development of the embryo or focal infections cause a big majority of habitual abortions. Nickel and Mussey state: "Abortion in guinea-pigs has been produced experimentally by intravenous injection of green-producing streptococci isolated from foci of infection in patients who had aborted. The premature emptying of the uterus in animals seems to be due to elective localization and growth of the streptococcus in the placental site, and death of the foetus due to invasion of its blood stream by this streptococcus. These streptococci lost their specificity on artificial mediums. Control strains from foci of infection in patients never having aborted, injected in like manner and in equivalent doses, did not produce experimental abortion."

It has long been known that syphilis causes abortion in many cases. Pelvic infection is often the cause of abortion, especially if the infection is within the uterus. General systemic conditions, especially when there is marked toxemia, are believed to be the cause of a number of abortions. There are also conditions when the micro-organisms are transmitted directly to the foetus, resulting in its death.

Of the exciting causes of abortions, probably sudden fear and trauma are as common as any, but fear and trauma are the cause of abortions in a small number of cases. Hillis states in his series that trauma and accident resulted in only 13 abortions in 1,000 cases. Missed abortion is a condition that occasionally we have to take into consideration. Waters, writing on missed abortion, states: "It is not of infrequent occurrence. It accounts for some instances of prolonged amenorrhea, accompanied by ill health otherwise unexplained. It is a very probable explanation for evidences of recession or *status quo* in pregnancy; and there is a tendency towards malignant change, hence, the necessity for early recognition and for appropriate treatment." Placenta praevia is the cause of abortions in some cases, and it is more frequently the cause in the latter months.

Incidence

Abortions are estimated to occur in 20 per cent or more of all pregnancies and the number seems to be increasing—due to the increased number of induced abortions. No doubt it would be safe to state that at least 25 per cent of all pregnancies terminate prior to the viable period. It is estimated that from one-fourth to one-third of all abortions are

*Read before the Norfolk County Medical Society, February 27, 1928.

criminally induced. It seems evident that abortions are more frequent than most reports indicate, because many cases are never seen by us. The history of all patients is important, but it is doubtful if there is any other condition encountered by the physician where he can put as little dependence in the history as he can in these cases. The lack of dependence will be illustrated by the following case: N. R., married, came to me for a general examination on November 18, 1927. She had chronic endocervicitis and retroversion. There was a slight enlargement of the uterus, but as she gave a history of menstruating two weeks previously, it was felt that the enlargement was due to congestion resulting from the retroversion. Operation was advised, and she would have been operated upon, except for conditions that arose shortly afterwards, necessitating a postponement. She returned January 16, 1928, complaining of pain in the pelvis, and she had a rather profuse purulent discharge tinged with blood. A bimanual examination was made and a general enlargement of the uterus was found that would correspond to about a 3 months' pregnancy. As the uterus had enlarged, the retroversion had disappeared. She stated she had menstruated every month, though menstruation had been delayed, but that a delay of about a week was usual with her. The condition appeared to be a case of threatened abortion and the patient was so advised. She persisted that she could not be pregnant as she had menstruated every month and that she had not had sexual relations for three months. Despite the patient's positive denial that she could be pregnant, she aborted two days later.

Therapeutic Abortion

Therapeutic abortion is a procedure that we feel occasionally obliged to perform, but the trend of opinion seems to be—and I believe it is correct—that we should be more cautious than we have been in the past, before we attempt therapeutic abortions. If there is any doubt as to the necessity for the procedure, or if there is any doubt as to the benefits to be derived from the operation, we should not attempt it. No doubt in the years to come we will be more conservative about what we believe is a necessity for this operation, and there will be a smaller number of therapeutic abortions performed. Vomiting of pregnancy is a condition which may occasionally be so severe as to necessitate a therapeutic abortion, but, if we energetically employ all of the measures at our command, we will find it exceptionally rare to have to produce a therapeutic abortion for pernicious vomiting of pregnancy. This also applies to tuberculosis, cardio-renal disease and pelvic tumors. It is not believed that therapeutic abortion should ever be performed for contracted pelves. It is not intended to give the impression that it may not be necessary occasionally to perform therapeutic abortions for the above mentioned conditions, but, at the most, it is exceptionally rare. Of course, hydatiform mole is a condition, when diagnosed, that should call for the immediate emptying of the uterus.

Diagnosis

The diagnosis of abortion, as a rule, is not difficult, but at times it may be most perplexing. Of course, before diagnosing abortion, it is necessary to determine pregnancy. The principal conditions to be differentiated from abortions are: hydatiform mole, extra-uterine pregnancy, infections of the cervix and endometrium that cause bleeding, and new growths, whether benign or malignant. What is most trying at times is to distinguish between a threatened and an inevitable abortion, and between an incomplete and a complete abortion. It is not uncommon to see cases of threatened abortion, that is, when the patient is flowing and possibly having slight pains in the pelvis, that the symptoms will subside and the case will go on to term. If the patient flows as much as she does during menstruation, abortion is usually considered inevitable. Passage of large clots is usually indicative of inevitable abortion. Flowing is the most important sign and the one on which we can depend the most. Of course, flowing accompanied by pain makes the diagnosis more certain. When the liquor has been discharged or when any part of the membranes or placenta has passed, the diagnosis of abortion is absolute. Even though you are present it is not always easy to say whether it is the liquor that is passing or not, especially if it passes in small amounts.

In threatened abortion cases in the early months of pregnancy, the pain will be more or less continuous, but later in pregnancy the

pains will be more cramp-like and if the uterus extends above the symphysis the contractions can be palpated. It is believed that a majority of all abortions are incomplete. The condition of the cervix will give important information. If the cervix is soft and partially dilated, abortion is inevitable or has already occurred. Thorough preparation of the patient before making a bimanual examination in these cases can not be emphasized too strongly. A cervix that is soft and has remained partially dilated is usually indicative of an incomplete abortion.

If inevitable abortion occurs after the third month, the uterine contractions will often empty the uterus; whereas, if the abortion occurs before the third month, the abortion is very often incomplete. If there is continued bleeding and large clots, there is probably an incomplete abortion. Some advise against a vaginal examination in these cases and make rectal examinations instead, but, if thorough preparation is made, the danger from a vaginal examination is not very great, and the information gained is considerably greater.

Mortality Rate

In considering the death rate of puerperal women we have to take into consideration the number of deaths from abortions. Practically all deaths from abortions occur in septic cases, hemorrhage very rarely causing death in these patients. The death rate will be influenced greatly by the organism present, the death rate being very high in the streptococcic cases. Williams states that the mortality rate in his streptococcic cases was 28 per cent. Hillis, in his series, states that the mortality rate was 2 per cent for all of his cases. It is evident then, if the death rate is even near 2 per cent in all cases of abortions, that the deaths from this condition are appalling.

Treatment

A case of threatened abortion should be kept quietly in bed. Either morphia or codein should be given freely. There is still some doubt as to the usefulness of an ice-bag to the lower abdomen in these cases, some claiming that it stimulates uterine contraction, while others claim it has sedative effects. Perhaps the majority prefer the use of an ice-bag. The diet should not be bulky and should consist of simple foods. Purgatives are contra-indicated, but low enemata can be given and they may be helpful. If the symptoms increase to the point of an inevitable abortion, the treatment should be directed along that line, but as long as there is doubt the treatment for threatened abortion should be continued. If the symptoms subside, we should be very slow about getting the patient out of bed, and she should be cautioned against over-activity after she is up. The length of time the patient should remain in bed after her symptoms subside will depend upon the duration of her illness and upon her general condition. If she has flowed for only a day, it is evident that she should not be required to remain in bed as long as if she had flowed for several days. It is probably never safe to let these patients out of bed under five days, and it is usually necessary to keep them in bed at least a week after their symptoms subside.

The treatment of inevitable abortion and of incomplete abortion is still the subject of much controversy. There are some who believe the proper treatment is the immediate emptying of the uterus, while others believe in non-interference except in emergencies. Each case should be treated individually; one case might demand immediate intervention, while another would be suited for only conservative treatment. Infection and the condition of the cervix are two conditions which will help determine the course of treatment. Practically all writers seem to be agreed that interference is contra-indicated in septic cases, but it is important that we should distinguish between sepsis and sapraemia. The infecting organism will have a bearing on both the treatment and the outcome of the case, the condition being more serious in streptococcic infections and, naturally, there is greater demand for non-interference in those cases.

The trend of opinion seems to be towards conservatism in the treatment of abortion, practically all agreeing that sepsis is a contra-indication for active treatment, and many agreeing that, if the cervix is contracted, there should be no instrumentation or manual dilatation.

The conservative treatment seems to be the method of choice in a majority of cases. In fact, it seems that conservative treatment should always be instituted unless there is a

definite indication for active treatment. The patient should be kept quietly in bed, and in Fowler's position. Morphia and bromides should be given to keep the patient quiet, and the morphia will help to soften the cervix. If the bleeding continues, pituitrin should be given in one-half c.c. doses for three or four doses, as indicated. Some claim pituitrin does not have any effect on the uterus in the early months, but there seems to be no doubt as to its effects after the first few months of pregnancy. Small repeated doses of fluid extract of ergot can be given to keep the uterus contracted in cases of subinvolution. An ice-bag is also useful in these cases.

If abortion is incomplete and it is deemed advisable to institute active treatment, packing seems to be the method of choice in many cases. Thorough preparation of the patient is essential before attempting active treatment. A good view is necessary for packing, and it can be secured with a bivalve speculum and an adequate light. It is not necessary to pack the cervix tightly, but the vagina should be thoroughly packed, especially at the vault, both in front of and posterior to the cervix. The packing should be left in for 24 hours and, if the packing has been thorough enough, pieces of placental tissue will be found on it when it is removed. The cervix will then be found to be more dilated and soft, and, if it should be deemed advisable to empty the uterus immediately, it could be more easily accomplished after packing than it could have been done before. It may occasionally be necessary to repack, but that does not happen often, especially if the packing has been thorough.

If a decision is reached to empty the uterus immediately. it can be accomplished with either the finger or a curet. The finger is best suited, provided the cervix is sufficiently dilated and the finger is of adequate length. If the finger is not suited, a dull curet can be used. Great caution should be employed in using a curet. The curet should be guided as much as possible by the finger and a piece of gauze should be wrapped around the curet as a safeguard. Instead of using a curet, a pair of forceps could be used with the gauze wrapped around them. Placental forceps are also useful for removing loose pieces of placental tissue, but they must be used with care. The use of instruments is safer in the early months of pregnancy than in the late months. We can not be too careful in emptying the uterus in these cases, and gentleness should be our watchword, whether the uterus is emptied manually or otherwise.

Placenta accreta is a rare condition, but if no line of clevage can be found and the hemorrhage cannot be controlled, a hysterectomy should be performed.

The conclusions of Hillis concerning the management of abortions are as follows: "Conservative treatment of abortion in febrile cases gives better results than active therapy. Febrile patients who have a five-day a febrile period have a greater tendency to continue a normal temperature after curetting than those who are operated upon before the end of this period. Afebrile patients with a five-day observation period have a greater tendency to remain with a normal temperature than do those who are curetted before the end of the rest period. About 6 per cent of all patients must be emptied because of alarming hemorrhage." The conclusions of Hillis seem to very adequately express the opinion of many concerning the treatment of abortions.

Report of Cases

Of the 56 cases of abortions coming under my care in which the history could be relied upon, it is fairly certain that at least 12 of them were criminally induced, and it is probable that four additional cases were induced, making a total of 16 cases, or 28.5 per cent, that were probably criminally induced. The average duration of pregnancy when the abortion occurred was two months and five days. Abortion was considered incomplete in 37 cases, or 66 per cent of the total cases. There were 12 cases curetted because of hemorrhage, a dull curet or a dull curet wrapped with gauze being used. Five of those cases were emptied because of rather profuse hemorrhage, and in one of them the uterus was packed. In five cases there was an observation period of four or more days before curettement was performed. In 12 other cases the cervix and vagina were packed, resulting in emptying of the uterus. There were no deaths, but two patients were critically ill for several days following self-induced abortion. I realize you cannot draw definite conclusions from this small series of cases, but the results seem to

point towards conservative treatment unless there is an absolute indication of active treatment.

Conclusions

1. Most writers seem to be agreed that the conservative treatment of abortions is best suited for a majority of cases.

2. Conservative treatment is the only treatment for septic cases, unless emergencies arise.

3. Excessive hemorrhage or moderate hemorrhage for several days calls for active treatment. Either empty the uterus at once, or pack the uterus and vagina, as indicated.

4. Packing appears to be the most appropriate method of emptying the uterus in a majority of cases.

5. Conservative treatment should always be instituted unless there is a definite indication for active treatment.

6. Gentleness should be our watchword when emptying the uterus, whether it is done manually or otherwise.

Bibliography.

Williams Obstetrics. Third Edition, p. 637.
Nickel & Mussey: *Medical Journal & Record*, April 6, 1927.
Gordon, O. A. Fr.: *J. A. M. A.*, March 29, 1924, Vol. 82, pp. 1021-1023.
Waters, C. H.: *Nebraska State Med. Journal*, Vol. 8, No. 8, pp. 288-291.
Macomber, Donald: *Boston M. & S. J.*, Vol. 193, No. 3, pp. 116-117, July 16, 1925.
Huntington, J. L.: *New York State J. of Med.*, Vol. 22, No. 12, Dec., 1922.
Hillis, David S.: *S. G. & Obs.*, Vol. 38, No. 1, pp. 83-87, January, 1924.
Rock, John: *Boston M. & S. J.*, Vol. 195, No. 18, pp. 843-854, October 28, 1926.
Polak & Phelan: *S. G. & Obs.*, Vol. 38, No. 2, pp. 181-185, February, 1924.

Medical Arts Building.

TEETH A SOURCE OF FOCAL INFECTION.*

By CHAS. D. TOWNES, D. D. S., Waverly, Va.

Focal infection should be of interest to every physician, since practically every branch of medicine deals with it, directly or indirectly.

The term, oral sepsis, is applied to any unsanitary, pathologic or diseased condition within the mouth and areas adjacent thereto, which may give rise to the liberation of toxins and thereby affect the general health. Teeth, tonsils, mouth, pharynx, larynx, ears, sinuses, and glands may all be sources of oral sepsis.

Oral sepsis is not a new discovery. Its evil effects have been known for many years. The relationship between systemic disturbances and defective teeth can be found in the older literature. Even the ancient Hindus possessed ideas and convictions which are beginning to dawn upon modern civilization, namely, that the gateway through which all nourishment passes, and through which also many germs may enter the system, should be kept pure and clean, in order that the health of the individual may not be impaired.

As showing the prevalence of oral sepsis, Black, in an examination of six thousand radiograms of six hundred mouths, found 78 per cent of the six hundred had one or more apical areas, or an area alongside the tooth. The average age of the patients was thirty-five, all of them being over twenty years old.

Duke, in an investigation of focal infection or chronic sepsis of any variety, found, in a tabulation of one thousand medical cases in general practice, 66 per cent oral sepsis, and in the other 34 per cent either none was found or the amount was so slight he did not think it had any bearing from the standpoint of systemic illness.

Extensive bacteriologic investigations at the Mayo Clinic and elsewhere have demonstrated that even pulpless teeth which show little or no evidence of infection from the radiogram standpoint are usually infected. The percentage is so high that all pulpless teeth must be considered potential foci of infection, and should be extracted if the condition of the patient requires the elimination of all dental infection.

I believe that the safety of pulpless teeth depends on the patients defense, rather than on the ability of the dentist to keep them safe. Many physicians and dentists have long advocated giving more attention to the teeth and mouth as sources of disease, and have endeavored to show the results obtained by following this method of elimination in individual cases by case history. The X-ray and modern means of diagnosis have served to prove the foundation for these ideas. Many teeth, however, that may be factors in making a diagnosis may be overlooked unless full mouth radiograms are made, which reveal the exact condition.

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No matter how careful the operator may be, there are times when he will be mistaken unless the entire mouth is radiographed. To my mind, there is every advantage in doing this, for the pictures serve as a record, relieve the operator of any uncertainty, and ultimately save time.

There is no single factor which will give so much valuable information, or which may be so deceptive as the radiogram. Radiogram does not show infection, but the results of infection, injury, and pathologic changes. Many people have great imaginations and profess their ability to see conditions in radiograms which are not apparent to others. The ideal use of the radiogram for dental purposes requires that it be produced by those who are familiar with the requirements of dental diagnosis, who understand correct angulation to bring out the suspicious area, and have sufficient technical training to produce finished pictures which will show all details clearly, understand what it really shows, and know its defects and limitations. This use requires also a knowledge of dentistry adequate for proper interpretation when considered with the clinical findings. The general appearance of the mouth, the articulation, the age of the patient and the use to which the teeth have been subjected are all important factors in the determination of the necessary procedure.

At the Mayo Clinic a chart is made of the entire mouth, noting those teeth which should be extracted for local reasons, and the questionable teeth, which may be retained if the systemic condition of the patient permits.

There are several types of teeth infection which have a bearing upon systemic disturbance, namely, periapical abscess, infection of the dental pulp, peridontal diseases, and impacted and unerupted teeth. The most poisonous of these is the periapical, for the reason that the inflammation is located in the bone, which does not possess a good blood supply, and there is no means of expansion when inflamed on account of the dense surrounding tissues.

Chronic periapical abscesses do not, as a rule, give rise to a single uncomfortable feeling, and easily escape the attention of the patient and physician. It is only when the condition becomes acute and where there is a liberation of toxins and formation of pus in excess of the amount capable of being carried off by the channels of elimination that symptoms of pain occur. In this type of infection it has been my experience to find the trouble in some area entirely unsuspected by the patient.

A periapical infection may spread to adjoining teeth or may exist chronically over a long period and degenerate into a cystic condition involving a number of teeth. Periapical infection has no regard for age; it may be found from childhood to old age. In a series of four hundred and ninety-eight cases of chronic arthritis, Moorhead found radiographic evidence of periapical infection in 89 per cent.

The next type of infection is the dental pulp. An infection in the root canal may persist at the apex of the tooth for years, when there is open drainage, without noticeable disturbance, but just as soon as a filling is inserted, the canal plugged, or the fistula closed, definite and marked systemic disturbance then appears. Infection from an open drainage is less apt to gain entrance into the blood or lymph streams.

The third type is peridontal diseases, which is a disturbance of the peridontal tissue. It includes all diseases of the tissue surrounding the tooth root which have their origin in the gingivae, peridontal membrane and gums. The term pyorrhea is quite widely used in speaking of these conditions. The disease is characterized in the early stages by pocket formation; alveolar absorption occurs, the tooth becomes somewhat loose, and pus can usually be pressed out of the pocket. The disease gives but little trouble in the early stages. In determining the procedure, too much dependence should not be given to the radiographic examination, as only bone conditions are shown, and the tissues play an important part. I advise the extraction when the bone absorption extends more than half the length of the root of the tooth.

The last type that I will mention that act as foci of infection are the impacted and unerupted teeth. The most common impactions are the lower third molars, upper third molars, and the cuspid teeth. They may be found anywhere in the mandible, even to its inferior borders, or in the ramus, and anywhere in the maxillae, including the nasal and maxillary sinuses.

Many systemic disturbances are due to infection in the surrounding tissue of the impaction. It is often difficult to make a decision whether an impaction is the possible cause of systemic

disturbance, where there is no manifestation and the radiogram does not show the result of infection. Every other factor should be ruled out before a decision is made to remove, as there is no certainty of the result to be achieved. I have observed favorable results in cases where the examination showed no indication of disturbance, and the removal of the tooth relieved immediately eye, ear, and general disturbance which had existed for long periods and had failed to respond to all other treatment. On the other hand, I have seen cases where the disturbance was blamed upon the impaction, and the condition did not improve upon the removal of the tooth. In cases where definite infection is shown to exist by radiogram or clinical evidence, the results after removal have invariably been good.

Infection from oral sepsis occurs as follows: by direct invasion of the adjacent tissues, by passage along the mucous surface of the alimentary tract, and through the blood and lymph channels, causing secondary foci in distant organs and parts of the body. The germs and toxins may be carried directly by the saliva to the tonsils, pharynx, eustachian tubes and alimentary canal, causing secondary irritation and absorption, giving rise to secondary foci.

Expectant mothers should be free from dental focal infection, both for their own safety and efficiency and for the continued vitality of the fetus. Many cases have been cited tending to show that the fetus has been prematurely expelled or rendered lifeless by mouth infection. Oral sepsis may affect a nursing baby by toxins from the mother.

Since it has been clearly proved that infected teeth may be the cause of systemic disturbance, it becomes necessary to be able to effect a positive cure or remove them. In brief, the dentist's responsibility in regard to focal infection is to find, prevent and eliminate conditions in and around teeth which may act as foci. There is no set rule for dentists to follow in this work, as the question of removal reverts back to the personal skill of the operator and his ability to treat successfully, and to the condition of the patient.

When the health of the patient is impaired, it would appear wise to remove all periapically infected teeth and those having marked peridontal disease, or those which will not respond immediately and without question to treatment.

In determining when to extract teeth, it is necessary to take into consideration many factors. Each case should be handled as good judgment and experience indicate. With very few exceptions, my practice is to recommend extractions of all teeth showing evidence of periapical bond involvement, all pulpless-teeth in patients whose health is seriously endangered, all teeth showing marked peridontal bone absorption, all pulpless teeth directly bordering on the maxillary sinus, all third molars when pulpless, all pulpless teeth when the root formation precludes the possibility of a good root filling, and all pulpless deciduous teeth.

The removal of teeth should receive serious consideration, as the consequences may prove serious or fatal. The surgical shock and opening of new tissue areas for the pathogenic bacteria often cause marked systemic disturbance. Where the resistance of the patient is low or impaired, it would appear best to remove all possible foci of infection, and thereby at least reduce the overload, but it is best to remove not more than one-fourth of the teeth at one time and to wait at least four days between sittings.

We often hear of cases where there has been no improvement as a result of elimination of infected teeth. In these cases we must bear in mind that when the source of a focal infection is eliminated, it does not always mean there will be immediate improvement of general condition, as it is necessary to give consideration to secondary effects of the primary focus. Since the progress of focal infection is usually so insidious and extensive, pathologic changes are often produced before the primary focus is discovered, and in chronic cases of long standing there may be injury beyond repair.

Organisms after gaining entrance into the general system acquire a new field of activity, and produce pathologic changes favorable to their own sustenance, and protect themselves against attack. This is especially true in arthritis, where the inflammatory action may continue long after the primary focus is removed. The simple removal, therefore, is not always sufficient to effect a cure without additional medical assistance.

The following significant facts should not

be overlooked: conditions improve in a large majority of cases after thorough removal of foci. Upon surgical access to pathologic area, conditions prove to be as bad, as shown by careful radiographic examination. All these pathologic conditions are progressive. Sooner or later these conditions become acute. The blood picture usually shows improvement after removal of infections. When characteristic septic temperature is present, there is usually a drop to normal after elimination of infection.

The removal of dental infection, either surgically or by other means, to correct a systemic condition, has often been a failure, not because of the dentist's work, but because infection elsewhere in the body was not found and eliminated. It should be borne in mind that infection in and around teeth is only one link in the chain, and it is unfair to the patient to extract teeth which lack sufficient evidence of trouble to warrant their removal unless the dentist has knowledge that other points of infection have been eliminated. In other words, a tooth which is not a local menace should be left as a last resort. Such action, therefore, hinges on direct co-operation between the dentist and physician. Since physicians and dentists have developed better ways and means of making diagnoses, patients suffering with systemic disorders traceable to foci of infection have been better cared for; for example, better results are being obtained in the treatment of infectious arthritis since the prostate has been included as a source of infection. To emphasize this point, the following case is reported from the Mayo Clinic, 1927:

Patient admitted to the clinic suffering from sciatica. Tonsils and prostate were found to be infected, and dental examination revealed that the two lower first molars were pulpless, but radiogram showed negative. The patient's dentist strongly advised against removal of these teeth, because he believed these teeth could not possibly be a source of infection unless X-ray revealed so-called radiolucent area. The patient gave his permission to have one of the teeth removed. The tooth was cultefed and a streptococcus infection found. At this time the prostate was undergoing treatment, but marked improvement was not noticed until after extraction of the other tooth. The patient was then more at ease than he had been for six years.

If the prostate had been overlooked and merely the two teeth and tonsils removed, the patient would not have been permanently cured. Again, it would have been unfair to have extracted teeth which were giving him service from the standpoint of mastication without elimination of the other two sources of infection.

Such examples emphasize the fact that the extraction of teeth alone often fails to bring about systemic improvement, and not only is disappointing to the patient, but tends to lessen interest of the professions in focal infection. Moreover, it is regrettable that patients are sometimes assured of relief through removal of foci of infection when it is far too late, a point emphasized by Bumpus, who says, "Septic teeth and tonsils are removed too often, with the assurance of benefit to the patient, after the heart has begun to beat irregularly, after albumin or pus has appeared in the urine, or after the joint has become deformed. Strange as it may seem, the idea that normal function can be restored to an injured kidney, a deformed joint, or leaking heart valve, by removing foci that initiated the disease years before, is apparently the most common misapprehension regarding focal infections."

I would like to quote the history of a patient suffering facial paralysis: Mr. B., aged forty-five, had paralysis of the right side for two years without complete relief. Infected teeth were present all during this period. The left side became paralyzed also, and he decided to have five teeth showing periapical infection removed. Improvement was prompt, and two months after removal of the infected teeth both sides of face were well.

Another case, reported by Mead, was a young man, twenty-four years old, previously healthy, who was running a typical lung temperature, having night sweats, with loss of weight and cough. Radiogram showed two periapical abscesses draining into the sinus. After the removal of the two teeth, all the above mentioned symptoms disappeared and the patient has remained well for six years.

I wish to emphasize the need for a closer co-operation of the dental and medical professions in handling properly the problem of the effects of oral sepsis upon the general health of the patient.

On the one hand, the medical profession

should not overlook the value and advantages of nature's own teeth, and should remember that no artificial restoration can really equal the tooth which was extracted. No attempt, therefore, should be made to sacrifice teeth without due regard to their usefulness and a positive assurance that they are causing general disturbance. This decision should be left to members of the dental profession.

On the other hand, it has been my observation that many physicians who fully believe in the teeth as a source of general disturbance are often handicapped in their efforts to eliminate oral sepsis by the hostile attitude of members of the dental profession who have contrary opinions.

When the general health of the patient is at stake, and it is the opinion of the attending physician that the condition of the mouth is the cause, or if he has even a suspicion to this effect, it should be the duty of any member of the dental profession to whom the patient is entrusted to be absolutely sure of his grounds before expressing a contrary opinion, and he should do this only after a most careful and painstaking examination.

The dental profession should more fully appreciate the position of the physician's interest in the welfare of the patient and understand more fully the evil effects of focal infection as a factor in systemic disturbance.

TREATMENT OF ECLAMPSIA AND ALLIED CONDITIONS.*

By PERCY HARRIS, M. D., Scottsville, Va.

The treatment of eclampsia is always difficult, due to the fact that so much is still to be learned about its etiology, and because such varied results in the treatment are obtained at the hands of the best obstetricians.

For the purposes of study it seems best to divide the treatment into three stages:

First.—The treatment of toxemias which early bring about the nausea of pregnancy, are seen most frequently in the first three months, and which may develop into hyperemesis gravidarum.

Second.—Treatment in late pregnancy, sometimes called the pre-eclamptic stage, seen about the fifth to seventh month, which, if uncontrolled, may become eclamptic.

Third.—Treatment in eclampsia or convulsions attended by coma, seen most frequently from the seventh to the ninth month (patient may be in labor or not, or following labor). This is one of the most dangerous complications that may befall the pregnant woman.

First, or Prophylactic Stage.—The most important thing for the patient to do is to put herself in the care of her physician at the disappearance of her first menstrual period, and this instruction should be given girls in the schools as soon as they reach the age of fifteen years. Pain and nausea are the two things that make pregnant women present themselves for examination; otherwise they are absolutely ignorant of their condition. It is in this first stage that your greatest work is done. At this examination the patient is thoroughly gone over. Blood pressure is taken, urinalysis, proper care of genitals ordered, pelvic measurements made, teeth, tonsils and eyes examined, and all focal infections excluded and given what treatment is necessary. Heart and lungs are examined, also blood test is made, the Wassermann being most important. Basic metabolism is very important. Caution patient to keep skin active, to avoid constipation, to indulge in moderate exercise, avoid alcohol and smoking. Prevent acute infections as far as possible; avoid getting chilled, as weather conditions may play some part in eclampsia. Give most explicit directions in regard to diet and avoid obesity.

Family history is important. Get history of epilepsy, syphilis, illnesses, and what surgical operations she has had. She may have had a nephrectomy. Twins endanger pregnancy. Nausea and vomiting are the symptoms which make the patient most likely to present herself for treatment, and these may have gone so far that hyperemesis gravidarum is the case. This is the most common of the toxemias of pregnancy, and is frequently seen in the young and robust girl with the first pregnancy. These cases have two main causes: first, hypofunction of the luteum of the ovaries, and, second, a manifestation of protein sensitization or anaphylaxis, the more common and important, which results from the waste products eliminated through the placenta.

The extent of this toxemia naturally depends upon the degree of efficiency of the detoxicating mechanism, especially the adrenals, liver and thyroids. Here try out your gland treatment, stimulate the liver, and abort the patient, if necessary, where vomiting is per-

*Read at a meeting of the Albemarle County Medical Society, February, 1928.

sistent in the early stages of pregnancy. I fear some serious toxemia later on and try to impress this on my patients. Out of approximately two thousand obstetrical cases, of which I have had the care from the beginning of pregnancy, I have lost only one, and this was one of the types that I have just mentioned. Diet plays an important part in preventing this terrible complication, by maintaining a metabolic equilibrium. A salt free diet should be carried out, while proteins and fats should be used sparingly. Can you expect anything else than toxemia in a pregnant woman who lives exclusively on meat, bread, potatoes and beans, with coffee, and in some cases alcohol added? All of these should be strictly forbidden. The diet should be so ordered that just enough nitrogenous matter is given to sustain life, in the form most easily assimilated, and which will be the least tax on the liver and kidneys. Always keep the liver and kidneys active. Prevent constipation, exercise moderately, keep skin active, drink plenty of light mineral water, diet carefully, as previously pointed out, and the second and third stages of eclampsia will not be reached;—in fact, some authorities go so far as to say that the occurrence of eclampsia in a pregnant woman, supposedly under supervision, means that some one has blundered. Whether this be true or not, it must be admitted that the fulminating type of the disease is extremely rare, and with proper observation and proper interpretation of the prodromal symptoms, which are almost invariably present, 95 per cent of the cases can be prevented. The etiology of the disease may be unknown, but its deadly results are not, and the part of wisdom is to prevent it before it ever occurs. Environment also plays a large part.

Second Stage.—This stage is one that you rarely ever see if the prophylactic treatment has been carried out according to orders, and the patient reports at regular and stated intervals for office examination of blood pressure, urinalysis, etc. I instruct my patients to notify me at once whenever they suffer from headache, dizziness, disturbance of vision, epigastric pain, or edema. Patients with all of these symptoms, and some quite aggravated, with high blood pressure and urine loaded with albumen, convince me that eclampsia is about to make itself manifest. I immediately put them to bed on a milk diet, watch them daily, taking blood pressure and making urinalyses, and give magnesium sulphate daily in ounce doses, by mouth, in some cases. Also, if the blood pressure is around 200 m.m. systolic, I give nitroglycerin, gr. 1/100, every four hours in connection with the preceding treatment. I have used sparteine sulphate, grs. ½, in some cases. I use sodium bromide and occasionally chloral hydrate for the nervousness. If these symptoms do not disappear in four or five days, and they continue to get worse regardless of treatment, I immediately start up labor.

Third Stage.—Now, if, in spite of all of your precautions, eclampsia does occur, what treatment is best to pursue? This depends upon whether the case is in an isolated spot, miles away from everybody, assistance unable to be gotten, or in a comfortable home nearby, or whether or not the patient can be gotten to a hospital. Of course a hospital is to be preferred. Think quickly; do not tire or give up, and keep the confidence of the whole family, if possible. If you are successful, do not be too much puffed up, for the result in the next case may take the wind out of your sails. Then your course of treatment is directed a great deal according to the patient, whether she is a primipara or not, and the number of convulsions, also the cervical dilatation, the size and condition of the baby. Twins also complicate matters. In quite a number of eclamptic cases that I have attended twins were delivered.

Conservative treatment of eclampsia offers the best results. Early delivery gives the child a better chance for life, but this cannot always be done. If Cesarean section is the method of rapid delivery chosen, naturally children will be spared and convulsions cease or become less severe after the uterus is emptied. Injury to the genitals will be spared. In cases where the pregnancy is not advanced, try and keep the convulsions under control and let the pregnancy continue. Forcible methods of delivery increase the dangers of infection to the mother, rupture of uterus and hemorrhage, and a large proportion of the babies succumb.

If the convulsions and labor pains are extremely violent and frequent, blood pressure high, coma and cyanosis deep, the uterus should be emptied as soon as possible, if it can be done with safety to the mother.

Under similar conditions without labor pains, *be most guarded* in the use of pituitrin, if at

all, using it only in the third stage. Make patient as comfortable as possible. Try to prevent a half dozen old grannies and all the relations from coming in the room. A good nurse is very essential. Make bed comfortable. Elevate foot of bed. Patient must be on side and edge of bed in order that the vomit and fluid can escape from mouth and not be aspirated in the lungs. I always caution my nurses to prevent the patient from biting her tongue. To do this, I use a wrapped clothes pin, a piece of rubber, or a piece of inner tube. Hot packs and ice-cap are also ordered. One of the next things I do is to give morphine sulphate, gr. ½ hypodermically, and repeat the dose in an hour, if necessary (if the convulsions have not subsided any); otherwise, I repeat in three or four hours as the convulsions may require.

At this point, I scrub up the patient, make a vaginal examination, then catheterize and order a soap-suds enema, several of them, if necessary. Now, if there is enough dilatation of the cervix to apply forceps, I deliver the baby very slowly, trying to prevent all the damage possible. If the convulsions are continuing and dilatation slight, blood pressure over 170 m.m. systolic, I do a venesection and usually draw off about 500 c.c. of blood, and, in the other arm, I give magnesium sulphate intravenously, 20 c.c. 10 per cent solution, and repeat every two hours, if indicated. Magnesium sulphate decreases the intracranial pressure by relieving the cerebral edema; it stimulates diuresis, aids in diminution of general edema, and convulsions generally subside. Sometimes I use 500 c.c. of a 5 per cent solution of glucose, more if indicated.

With the preceding conditions existing, I start my dilatation with a Voorhees' bag, and as soon as I can get dilatation enough (and it is terribly slow dilating when you are waiting and worrying too), I proceed as before with instrumental delivery.

I am forced to use chloroform for an anesthetic occasionally, even though it is contraindicated, on account of the inflammability of ether and the inability to carry gas around with me. Where the coma is very profound, no anesthetic is neccessary.

Lumbar puncture is sometimes required. In some instances I wash the stomach out with soda water, and, before withdrawing the tube, put in an ounce solution of magnesium sulphate. If the pulse is very weak and I fear cardiac failure with edema of the lungs, I give digitalis. Convulsions continuing after delivery and treatment are most serious.

All eclamptic patients should be looked after for months after delivery. They should be warned of the dangers of another pregnancy right away, though they seem rendered immune to future eclamptic seizures. Make urinalyses, blood and metabolism tests frequently. High blood pressure may be due to hyperthyroidism and syphilis, and not to the toxemia of pregnancy. I have just had a case of each with eclampsia, and am happy to say that both are doing well under treatment.

High mortality in eclamptic women is not due to the physician, but to the ignorance of the patients in caring for themselves before and after delivery.

A DISCUSSION OF SOME OF THE COMMONER TYPES OF INFANTILE DIARRHOEA, AND THE PRINCIPLES UNDERLYING THE DIETS USED IN THEIR TREATMENT.*

By BASIL B. JONES, M. D., Richmond, Va.

The gastro-intestinal tract, from both anatomic and physiologic considerations, may be divided into several different segments. The esophagus is essentially a transporting tube to convey the food from the mouth to the stomach. The stomach, with its two sphincters, is the first repository. Here the food is churned by the contractions of various muscular layers and is thoroughly mixed with the digestive juices, first from the salivary glands and later from the secretory glands of the stomach itself.

The gastric juice, which normally contains hydrochloric acid, pepsin, and rennet, and probably a little lipase, produces a definite though incomplete digestion of protein and to a slight extent probably of fat. Normally, the food, after being partly digested, is squirted through the pylorus in small amounts by the peristaltic contractions of the stomach. In the duodenum the acid chyme is not only subjected to the alkaline digestive juices from the pancreas, liver and small intestine, but plays at least a dual role in physiology. First, it stimulates the production or activates the hormone called secretin, and so whips up the secretory glands in the vicinity. Second, it in some way

*Read by invitation before the Southside Virginia Medical Association at its meeting in Richmond, June, 1928.

seems to favor or induce pyloric closure until its acidity has been neutralized. The small intestine from the jejunum onward is primarily absorptive in function. The substances chiefly absorbed are the end products of protein, fat, and carbohydrate digestion. The material in the small intestine moves right along, being gradually absorbed as it moves, and is next pushed through another sphincter-like area, the ileocecal valve, into the large intestine. Here water and salts are absorbed and probably the final products of enzyme and bacterial digestion. In the large intestine the material concentrated, as indicated above, is gradually pushed around to the rectum and from thence through the anus.

The movements of the gastro-intestinal tract are influenced not only by the nature and amounts of the material within its lumen, but also by reflex stimuli originating outside the canal and by hormones and other substances which exert either a stimulating or depressing effect on the motor nerves. The same factors which influence the movements of the gastro-intestinal tract, either directly or indirectly, affect the secretory activity of the various glands which supply the various digestive juices.

Minor disturbances, in the majority of instances, are probably compensated by a certain inherent elasticity or reserve, and so do not create alarming or even noticeable symptoms. Disturbances of a more serious nature will result in symptoms of varying intensity, and also of varying type according to the nature of the disturbance. To the discerning eye the symptoms should reveal the nature of the disturbing factor and so indicate the procedures necessary to combat it.

In the great majority of instances where vomiting and diarrhoea are the outstanding symptoms, one of three types of disturbing factors will be found playing the etiologic role: first, irritating substances ingested; second, irritating substances produced in the stomach and intestines as the result primarily of inadequate digestion and absorption, and secondarily to irritating substances resulting from the rapid growth of bacteria in the unabsorbed residue; third, actual infection of the wall of the intestine with the irritation which goes along with it.

Where the disturbing factor is some irritating substance ingested, the history and the nature of the vomitus and bowel discharges often will indicate the offending substance. Generally when the offending substance is some spoiled food, several members of the family will be affected simultaneously. Ordinarily the temperature is not elevated. This type of disturbance is best controlled by elimination, which nature can generally accomplish adequately without assistance, and by rest to the gastro-intestinal tract until the irritation has subsided. Water, orange-ade, or some dilute fruit juice or weak tea will adequately meet the needs until the appetite returns. When the patient is hungry again and if the symptoms have subsided, the usual diet can be resumed in amounts indicated by the appetite. The transient nature of this type of upset is more or less diagnostic. When symptoms continue longer than a day or so, the chances are that the cause of the disturbance was something else than the food which originally was blamed.

The second type of disturbance mentioned above includes a heterogeneous group with symptoms of varying intensity, which really should be classified further in accordance with etiology or clinical manifestations. Because clinical experience seems to warrant, I am going to discuss this type under two headings, fermentative diarrhoea, and cholera infantum.

Fermentative diarrhoea is distinguished clinically by the occurrence of numerous loose stools; usually green in color, which contain mucus and only partly digested food, and which are acid in reaction. This type of stool usually irritates the skin about the diaper area, and often renders this area quite raw. Vomiting usually is not an outstanding feature, and the temperature often is only slightly elevated.

The type designated cholera infantum may start with loose greenish stools which are acid in reaction at first, but soon lose the characteristics of the fermentative type and become alkaline or neutral in reaction. The stool typically is watery, contains little or no mucus, is generally of a yellowish brown color, and often is passed with considerable gas. Vomiting is a striking feature of this type of disturbance and the vomitus often is brown streaked. Water is rapidly drained from the body and in a few hours dehydration may become severe. The eyes and fontanelle sink, the skin is often cold and of a dull gray

color; it has also a doughy feel and very little elasticity. The temperature, which may be only slightly elevated at first, usually begins to rise as the dehydration progresses and often is quite high shortly before the death of the patient. Infants suffering with this type of diarrhoea often will recover if treated properly before extreme dehydration and acidosis occur, but if treatment is delayed or improperly conducted, death usually will result.

The etiology of these two types of diarrhoea has not been definitely determined, but there is a growing impression among pediatricians that parenteral infections are actively concerned. External heat and high humidity, especially when the infant is too heavily dressed, seem often to be causative or accessory factors. My own view is that parenteral infections, especially infections of the naso-pharynx and middle ears, are primarily responsible. The mechanism probably is somewhat as follows: The toxins absorbed from the infection interfere in some way with the normal emptying time of the stomach and also cut down the secretion of gastric juice. Often the toxins act to produce vomiting, and at other times vomiting may result from the prolonged retention of only slightly digested food in the stomach, which produces discomfort and nausea. Local irritation in the pharynx, acting reflexly, may well be a factor in causing vomiting in some cases. Due both to the effect of the toxins and to the diminished amount of gastric acidity, the digestive juices from the liver, pancreas, and small intestine also are diminished. Consequently, food which enters the intestine cannot be properly digested. Another effect of the lowered acidity is the failure to kill the bacteria in the food and saliva. This combination of circumstances permits a rapid growth of bacteria even in the small intestine, which under normal conditions is almost sterile. The bacterial growth produces an excess of irritating fatty acids and probably other toxic and irritating substances which stimulate rapid peristaltic movements of the intestine. It may be well to state here that the most irritating fatty acids result from bacterial growth in carbohydrate material.

Since we are dealing with individuals of varying ages, varying digestive capacities, and varying degrees of illness, our aim should be to fit our treatment to the needs of the patient, and not to some suggested formula.

Breast fed infants rarely have severe types of diarrhoea. They do, however, show evidence of milder fermentative diarrhoea rather often. In this type of patient, our plan of treatment should be to diminish the amount of breast milk taken by the infant or possibly to alter the diet by the addition of cow's milk protein. We can cut down the amount of food by giving the baby boiled water before the feeding, or by removing the infant from the breast before he has eaten as much as usual. Generally this plan of treatment will be adequate so far as diet is concerned. If the addition of cow's milk protein seems indicated, we can use a solution of casec or some similar preparation, or a proper dilution of powdered protein or albumin milk. Since the infant probably will not take any of these preparations readily, it is advisable to give the modified cow's milk before putting the child to the breast. Rarely is it advisable to remove the child from the breast entirely.

When the bottle fed infant develops diarrhoea, our problem is somewhat more complex. The chances are that the bottle fed infant will have less resistance than the breast fed infant. Certainly the preparation of a suitable diet for the bottle fed infant is more difficult than the proper alteration of the diet of the breast fed infant. When we prescribe a formula for an ill infant, especially for an infant suffering from diarrhoea, we have to remember the lowered digestive capacity, the tendency to fermentation when excessive amounts of undigested and unabsorbed food remain in the intestine, and the fact that carbohydrates are the materials which ferment. We also must remember that protein tends to the production of alkaline feces, and that when protein is excessive in the diet it seems to inhibit more or less the carbohydrate fermentation. Simply boiling cow's milk renders it much more digestible than raw milk. Removing some or all of the cream cuts down the production of fatty acids and at the same time takes off some of the load from the overtaxed and poorly functioning digestive glands. The addition of some organic acid, such as lactic or citric, to the boiled cow's milk eliminates the action of the buffer salts which are about three times more plentiful in cow's milk

than in human milk, and so spares the hydrochloric acid of the gastric juice for the performance of its important rôle in digestion. Milk soured by some known strain of lactic acid producing bacteria may be used or the acids mentioned above may be added to the milk after it has been boiled and cooled, in amounts varying from one to four drops of lactic, or four to twelve drops of citric acid in the form of lemon juice, to each ounce of milk. For the more severe types of fermentative diarrhoea, the protein milk prepared according to Finkelstein's formula often is quite helpful. This preparation has a lower amount of fat and carbohydrate and a relatively higher amount of protein than straight cow's milk. In addition, it is acid in reaction, and the curd has been broken up mechanically. Several powdered protein milk preparations are now on the market, which can easily be prepared by the addition of water.

The important principles to bear in mind in prescribing diets for infants suffering from fermentative diarrhoea are as follows: Start off with small amounts of food which can be digested by the poorly functioning gastrointestinal tract. Prescribe a formula which will starve the fermentative bacteria which thrive in carbohydrate media, and which by its relatively high protein content will tend to the production of alkaline stools. Be sure that the causative process and its resulting functional derangement of digestion have subsided before resuming the diet normal for the infant. Starvation and especially dehydration must be avoided. An abrupt change from the anti-diarrhoeal formula to the normal feeding is liable to cause a return of symptoms and so should be avoided.

Cholera infantum is a much more severe and fatal disease than fermentative diarrhoea. The etiology and the mechanism which produce this violent derangement of the gastrointestinal tract are not absolutely known. Many cases presenting characteristic symptoms have been reported in children who had more or less obscure infections in the middle ears and mastoids. Some of these cases have improved when the local infection was given adequate treatment. The probability is that some specific organism or closely related group of organisms, growing and producing their toxins in some parenteral focus, will eventually be incriminated. Whatever the cause, the resulting derangement of digestion is terrific. Water literally drains from the blood vessels into the lumen of the intestine. Basic salts and chlorides also are lost by way of the intestine, and in consequence the stools lose their acidity and may become alkaline. Profound changes occur in the various organs and tissues of the body as the result of dehydration and acidosis. Food of any sort for the first twenty-four hours will do more harm than good. The real problem is to slow up the loss of water and salts and to replace that which has been lost. Of course, the focus of infection, if such exists, should be sought and treated if possible. Because of the vomiting and diarrhoea, water often cannot be given by mouth or by bowel, and so must be given intraperitoneally or subcutaneously in the form of normal salt solution, or Ringer's solution. Only water, dilute orange juice or weak tea should be given by mouth at first. After the first day or so, skimmed lactic acid milk, preferably one of the dried preparations, may be tried in small amounts. This type of food, with the subsequent addition of a little glucose or dextri-maltose should gradually be increased if the symptoms warrant. It is easy to bring back the original symptoms if too much food is given too soon, especially if sweet milk is used. The resumption of a normal diet must be accomplished very slowly even after the infant is apparently over the disease because of the slow recovery of normal digestive capacity.

Diarrhoea which results from infection of the wall of the intestine is generally due to one of the types of dysentery bacilli. Amoebic dysentery is rarely encountered in our infant population, and so will not be considered in this discussion. Bacillary dysentery is a specific infection located in the walls of the lower small intestine and generally throughout the large intestine. The pathology varies from a catarrhal inflammation to actual ulceration. Irritant toxins are produced which call forth mucus, pus, and blood from the affected intestinal wall. Due to the irritant effect of the bacterial invasion, peristalsis, especially that of the large intestine, becomes very active. Fermentation of food residue probably plays a minor role in this disease. Some writers even urge the use of carbohydrate food with the idea of favoring the growth of lactic acid

producing bacteria because dysentery bacilli produce more toxic material in an alkaline medium. Any increase of peristaltic activity which might result from such a diet probaby would be negligible. Proper drainage of the toxic discharges is essential and must not be prevented by medication or diet regulation beyond the point of moderate relief of tenesmus.

Due to the toxemia and resulting fever, the appetite is poor and the capacity of the stomach and upper small intestine to digest food is impaired. These considerations should be borne in mind while ordering the diet. Sweet milk cannot be properly digested and often appears to aggravate the symptoms. Buttermilk, prepared from some known strain of lactic acid producing bacteria, is the best milk preparation to use. It has the fourfold advantage of low fat, mechanically broken up protein, acid reaction, and viable lactic acid producing organisms. Carbohydrates, in the form of dextri-maltose, well cooked cereals or rice, usually can be handled without trouble. Orange and lemon-ade help supply food and fluid and should be used freely, even in the treatment of small infants. The idea prompting the use of the foods mentioned above is to give the patient food which can be digested easily, which will be largely absorbed, and which will leave only a small amount of residue to be handled by the infected large intestine. The nutritional value of these foods is good and their ingestion should help the patient to fight the infection.

The assumption of the regular diet should not be attempted until the symptoms of active infection have disappeared, and even then should be made rather gradually.

In concluding this discussion, it probably is well to reiterate that most gastro-intestinal disturbances in infancy and early childhood are due to infection. In the majority of instances the infection is located primarily in the naso-pharyngeal area. From the infected process toxins are absorbed and bacteria are swallowed. Derangement of the physiology of the gastro-intestinal tract results, and this derangement is shown in both the motor and secretory activities. Ability to digest and absorb food is impaired, as well as power to kill ingested bacteria. This combination of circumstances permits rapid bacterial growth, even in the upper part of the small intestine, which ordinarily is almost sterile, and probably explains the diarrhoea.

In a smaller number of cases the wall of the intestine is invaded by bacteria, generally by some type of dysentery bacilli, and characteristic symptoms result.

Proper treatment depends not only on the recognition of the seat of the infection, but also on the recognition of the derangement of function and the knowledge of the procedures best adapted to combat the morbid process. Chief among these procedures are maintenance of adequate fluid intake, and the preparation of a diet which will both nourish the patient and combat the offending bacteria in the intestines. General principles underlying the preparation of the diets for several different types of diarrhoea have been given. Stress also has been laid on the danger of changing too soon from the anti-diarrhoeal type of diet to the diet normally taken by the infant.

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PRELIMINARY REPORT IN TREATMENT OF NEURO-SYPHILIS.

By JOS. T. N. McCASTOR, B. S., M. D., and
MARY COUSINS McCASTOR, B. S., Thomas, W. Va.

The problem of neuro-syphilis is shared by the general practitioner as well as the specialist. Indeed, one authority has said, "late syphilis of the nervous system is the business and responsibility of the general practitioner. While certain aspects of its diagnosis and treatment may demand the help of a specialist, its earliest detection and its effective treatment by an intensive therapy must be in the hands of the patient's home physician. If he will perform his whole duty by the first two or three years there will be a reduction of 5/6 in the incidence of consequences in the nervous system."

The nervous system is attacked early. We certainly see it within the first and second years in many cases. In other words, the nervous system is early more or less involved. Whether it be due to refinement in diagnosis or the truth of the theory that the spirochaete is adapting himself to modern treatment, statistics record the increase of neuro-syphilis. The Central State Hospital records show approximately 33 per cent of admittances from July 1, 1927, to January 1, 1928, have syphilis

*From Department of Special Work, Central State Hospital, Petersburg, Va. Work done when Dr. McCastor was connected with staff of hospital.

Luetin by courtesy of Lederle.

Coley's Fluid by courtesy of Parke, Davis Co.

and 20 per cent general paralysis. Heckt, of New York, states he has seen cerebro-spinal lues showing positive serology six weeks after appearance of chancre.

At present malarial therapy is in the forefront of the therapeutic armamentarium. Cases of neuro-syphilis which have been refractory to any other treatment are benefited. In the original group of Von Jauregg, in 1917, consisting of nine paretics, six were benefited. He followed this with a series of two hundred cases with a result that fifty improved to a complete remission. Gerstmann reports one hundred and twelve remissions out of two hundred and ninety-four cases. Nonne's clinic reports 50 per cent remissions. Kirby had thirty-seven cases improved out of his group of one hundred and six. And so the thread of optimism runs throughout the reports of malarial therapy. Yet no satisfactory theoretical explanation has been offered as to how malaria acts in the paretic. Mueller offers a theory that changes of the vessel tonus occur in various parts of the body—vaso-dilatation leading to local hyperemia, and transudation into the neighboring tissue is alleged to bring about migration of leucocytes along with the serum. The blood pressure falls and the general leucocyte count is lowered in the peripheral blood stream while the abdominal vessels are dilated. Soon this is overcome by the vaso-constrictors which are well functioning in a healthy tissue, but in the affected brain this condition comes on very slowly, hyperemia is prolonged, thus giving the leucocytes a chance to penetrate into the nervous tissue.

Histological findings are still wanting in order to arrive at a more rational and scientific treatment. This would lead us to search for a substance that will have all the advantages of malarial therapy without its disadvantages. The Riga pathologist, Aldelheim, reports seven deaths after malarial therapy. In five of them severity of the acute inflammatory process in the brain was striking. Freeman, in the *Journal A. M. A.*, March 16, 1927, likewise points to the increased blood supply to the brain after malarial therapy. To sum it briefly, malaria seemed to cause a hyperemia of the brain, which, later organized, caused resolution of gumma where formed, a cessation of glia proliferation with absence of plasma cell infiltration—a return in some to a condition so near normal that one would hesitate to call the brain one of a paretic.

Stratman-Thomas are inclined to ascribe the clinical betterment with tryparsamide therapy, not to superior penetrability, but to reabsorption of inflammatory exudate and improvement in cell nutrition, and the betterment in serology to decrease spirochaete interreaction in the tissue.

Luetin (Noguchi), an emulsion of treponemata, was injected into the skin in an endeavor to produce a cutaneous reaction similiar to the Von Pirquet test for tuberculosis. Klausner was the first to describe the red elevated oval infiltration produced by this test. With this thought in mind, and after experimentation with animals in which a slight degree of hyperemia was produced in the meninges and cord, Driscoll suggested the employment of luetin in our four series of paretics, treated as follows:

Series I. Neo-salvarsan ¼ mg. intra-spinally.

Series II. Luetin ¼ c.c. to 1 c.c. intra-spinally.

Series III. Tryparsamide 2 gms. intravenously.

Series IV. Coley's fluid 3 mm., increasing gradually, intravenously.

Neo-Salvarsan Intraspinally

Time will not permit case reports of our experience with neo-salvarsan ¼ m.m. intraspinally, at weekly intervals. In this series the age group was younger than all other series. The patients' ages were 29-35-52-55, respectively. None died, but none have improved. This group was also the best physically at the beginning of treatment.

The *U. S. Bulletin* says, "experience shows that the arsphenamines are deficient in therapeutic action in parenchymatous syphilis. Weschler says, "The results in neuro-syphilis from arsphenamine, according to Nonne and Petry, are no better than from mercury and iodides."

Luetin Therapy

By five phases positive we mean, blood Wassermann, spinal fluid Wassermann, and high cell count 12 or over, and globulin positive.

James M., age 30, five phases positive, weight 135. Patient is excited with expansive delusions of wealth. Has millions of wives

and race horses, and twenty-seven fine cars. General nutrition good.

Treatment.—Treponemata, ¼ c.c. 11/22/27; ½ c.c. 12/19/27; 1 c.c. 1/26/28. This last dosage caused severe headache, temp. 101, so was reduced to ½ c.c. 2/12/28.

January 12.—Improved physically. February 15.—A change for worse. February 18.—Delusions of wealth still persisting; status slightly improved physically with increase in weight to 155 lbs. Following the last two injections, the patient has had temperature 101 to 102, with 10,000 leukocyte count.

Ed. T., age 40, 5 phases positive. Weight 143 lbs. General state of nutrition good. Patient is confused, delirious, incoherent, flow of ideas, slight slurring of speech. Reflex normal on the left, and diminished on the right.

Treatment.—Treponemata, ½ c.c. 1/22/28; 1 c.c. 1/26/28 (with reaction); ½ c.c. 2/5/28; ½ c.c. 2/12/28.

This patient also had eight injections of mercury (mercurosal). Patient still confused. No gain in weight. Slight improvement.

Silas T., age 29. Condition very poor. Was depressed, heard voices, imagined someone had written his name on wall and had conjured him. This man was disoriented, silly and depressed. Destroyed his clothing and bed. Five phase positive.

Treatment.—Tryparsamide was given December 11, 1927; luetin ½ c.c. December 15/27. Improvement was immediate. He gained in weight and lost his delusions. Was oriented and could recognize his wife. The dosage was increased to 1 c.c. He died within 24 hours. Brain was removed for study. The congestion was striking.

John W., age 45. Condition poor. Five phase positive. Patient was a vegetative organism occupying an *in utero* position in bed. Fed by an attendant. Was carried to the operation room for treatment. After two injections he enjoyed a period of excitement, running to and fro in the wards. At present he is quiet, no longer a bed patient, fairly well oriented and walks up for treatment. Has gained in weight and strength. Involuntary passage of urine still persists.

Striking hyperemia of brain. Case of Silas T. Death followed 3rd injection of luetin intraspinally.

Treatment.—¼ c.c. 12/1/27; ½ c.c. 12/11/27; ½ c.c. 12/15/27; ½ c.c. 12/19/27; 1 c.c. 1/26/28; ½ c.c. 2/12/28. Definite remission.

Robt. T., age 45. Condition good, weight 140 lbs. Five phase positive. At initiation of treatment was confused, dull, retarded and incoherent. Tremors of tongue, slurred speech, diminished knee reflex, ataxic gait, positive Romberg. Middle zone curve (mastic). Diagnosis—tabo-paresis. After five injections of luetin there has been no improvement. He

weighs 130 lbs. The course of tabo-paresis is progressing uninfluenced by the luetin.

Three other patients, Andrew Mc., Thomas R., Robt. C., ages 36, 45, and 41, respectively, received one injection each. Andrew Mc. received an additional dose. These patients were all in the terminal stage of paresis and subsequently died.

Result: Eight cases, four deaths; definite remission, one; marked improvement, one; slight improvement, one; no improvement, one; death due to injection. one, Silas T. Autopsy revealed nothing of importance with exception of the brain which was markedly congested. We have not received the microscopic report from Dr. Phillips at this time.

Coley's Fluid

In the *Journal of the Kansas Medical Society* for September, 1927, Drs. Rotter and Knoop, of Parsons, Kansas, report having treated a paretic successfully, the first of its kind, in which Coley's fluid has been used.

So our problem was to prove or disprove the efficacy of Coley's toxin in the treatment of paresis and to ascertain its action. Other studies are being done, not mentioned in this report.

This preparation is a mixture of the toxins and derivatives of streptococcus erysipelatis and prodigiosus bacillus, which are grown separately, then killed, mixed, and finally diluted to a definite strength as determined by the percenetage of protein content.

The toxins were administered intravenously. Begun in every case with a very small dose, not over 3 minims for an adult, diluted with a little boiled water to insure accuracy of dosage. Subsequent doses were increased according to the tolerance of the patient.

Case Histories

Washington S., age 45. Duration of attack 18 mos. Wife states that in 1922 his vision became impaired. He had 4 injections intravenously. No more complaint until 1926, when for a year he had the usual treatment weekly.

Spinal fluid and blood negative.

History of positive Wassermann. Ran paretic curve in October. Received four injections of Coley's fluid. Treatment discontinued because of physical condition of patient.

Admission Note: Delirium, change of expression, indecision, untidiness, change in attitude toward family. Attempted to kill wife with knife sometime previously.

Mental Condition After Treatment: Knows his wife, speaks rationally, is not confused. Mental condition approaches normal. Ate a large breakfast today, whereas a week ago he was fed by the attendant.

Physical Condition: No apparent improvement and no change in serology.

Physical Examination on Admission: Reveals slurred speech, increased knee reflex, spastic gait. Pupils are fixed.

Stephen, B., age 64. Diagnosed as senile psychosis. General state of nutrition poor.

Psychoses: Previous attack a month before admittance. Wandering incoherent talk and change of expression. Irritability, indecision, untidiness, morbid fears. Hallucinations—sees dead people. Five phase positive. Final diagnosis, general paralysis.

Physical Findings: Vertigo; positive Oppenheim, left. Tremor, loss of motor power in left arm, ex. reflexes, tongue deviates to left. Aortic regurgitation, arteriosclerosis. After three injections of Coley's fluid, treatment was discontinued because of patient's age and condition. Died Feb. 12, 1928. No autopsy procured.

Winston, L., age 68. Five phase positive. Condition very poor. Attack began two weeks before commitment. Indecision, restlessness, wandering, untidiness. Silly conduct.

Diagnosis: Senile psychosis on admission.

Final Diagnosis: Paresis.

Neurological Findings: Ex. reflex, positive Oppenheim, tremor of tongue.

Date of Injection: Jan. 16, 1928. *Spinal Fluid Serology:* 3+. Heavy trace of globulin, 30 cells, 44432 curve.

Date of Injection: Jan. 23, 1928. *Spinal Fluid Serology:* 4+. Globulin negative. 0 cells 00000 curve.

Date of Injection: Feb. 9, 1928. *Spinal Fluid Serology:* Globulin negative. 0 cells 00000 curve.

Died Feb. 11, 1928; circumstances of death unknown. Brain removed for study.

Willie D. and Wash B., aged 50 and 56, respectively, five phase positive, died after two and one injections respectively. Brains removed for study. The latter had chronic nephritis, arteriosclerosis, and general paralysis.

Roy C., age 35. Condition fair. Duration

of psychoses 6½ years. Wassermann, 1921, negative; spinal fluid negative. Increased globulin; 0 cell count. Paretic curve.

Symptoms: Slurred speech, ex. reflexes. Hallucinations. Disoriented for time. The Lord spoke to him and told him to repent. Delusions of grandeur. Thought souls were after him, and his wife was one of them, and he would kill her. Very antagonistic.

Treatment: This patient received six injections of Coley's fluid. Immediately after injection 15 c.c. of spinal fluid were removed. After the second treatment the spinal fluid was negative. Physically the patient has improved with gain in weight. He is approaching the normal mentally but still retains hallucinations concerning the Deity.

Walter T., age 45. Admitted May 10, 1919. Readmitted Sept. 1, 1928. Destructive and noisy. Condition poor. 5 phase positive. Physically poor and mentally confused. Two injections given; patient shows no change for better or worse.

Claudine S., age 33. Condition poor. Admitted Nov. 29, 1927. Weight 100 pounds. General state of nutrition poor. History of immorality, attempting to run out on street with no clothes on, delirium, excited, wandering and untidy. Symptoms developed rapidly. Delusions—some one was poisoning her. States she is 33 years old. Soon after admission greatly depressed. Physical ex. as above, with course tremors, ex. knee reflex on right, diminished on left. Co-ordination poor. Blood pressure 100/85. Five phase positive.

Treatment: Patient received five injections of Coley's fluid. Immediately after each alternate injection ten c.c. of spinal fluid was withdrawn. After the fourth injection the spinal fluid findings were negative. This patient has gained six pounds, tremors are not so pronounced, delusions not discoverable, patient very neat and tidy. Condition at present very good. Definite remission.

Luvenia P., age 49. Condition poor. Duration of present attack 6 months. Indecision, imsomnia, depression, change of expression, restlessness, impairment of memory, unable to recognize brother.

Treatment: One injection. Patient's condition so poor that we discontinued all treatment except iodides and general supportive measures.

Summary.

Nine cases, deaths four; no improvement, one; slight improvement, one; markedly improved, two. Serology changes in four of the five studied for serology changes.

Tryparsamide Therapy.

Reese, of Wisconsin Psychiatric Institute, gives the following concise summary of tryparsamide: Tryparsamide requires three or four months, but it is decidedly beneficial in 60% of the cases. If controlled properly, it is not harmful to the optic tract.

Hecht refuses to employ tryparsamide, having obtained no success with it. Stokes states that the effect of this drug on advanced or fully developed paresis is especially disappointing.

We treated seven cases. All were under forty-five years of age. The dosage was 3 grams intravenously weekly. One, after no improvement, was given luetin—see Andrew Mc. One developed transient amblyopia and the drug was temporarily discontinued.

There were two deaths, two definite arrests of the progress of paresis with marked improvement, and one no change.

Conclusions.

We are fully aware that it is impossible to draw definite conclusions from such a small number of cases in such a short space of time. It will take years of study, to justify our exaggerated hopes to ascertain whether these remissions are permanent.

The patients were not selected in series II and IV, or rather these groups were chosen because of the extreme hopelessness of their condition. Series I and III were less advanced in years and were in a better state of nutrition. However, we might say that in our small group of four cases, neo-salvarsan intraspinally was unsuccessful. General paralysis progressed uninfluenced by this mode of therapy.

In Series II—Luetin,—there was one definite remission but phenomenal changes here cannot be considered exceptional, because remissions occur spontaneously in from 13% to 25% of paretics. There was marked improvement in one case, and slight improvement in one. There was a total of eight of these cases. Pathological findings were grossly apparent and were in accord with the description by Aldelheim and others of a paretic brain after malarial therapy, as well as with Driscoll's

artificial induction of hyperemia of the brain of dogs with luetin. If malaria favors the healing process by hyperemia of the brain, the rationale of luetin therapy has some *raison d' être.*

Series III — Tryparsamide Therapy — resulted in two definite arrests of the process in seven cases. This must be accepted with caution because of the spontaneous subsidence occurring in neuro-syphilis. Furthermore, eye symptoms developed in one of our cases, which indicates that this drug must be given with caution.

Series IV—Coley's Fluid—resulted in two being improved markedly, mentally and physically, although the one improved mentally does not give much promise. In this group the mortality was highest, but if the fact is taken into consideration that the condition of the majority of these patients was poor at the outset and that two were over 64 years of age and greatly deteriorated, this report will not compare so unfavorably with the other experimental work. The striking feature is the rise in temperature to 104 degrees and an increase in the leukocyte count to 35,000 within two hours after injection in those benefited, in contrast with a decrease in temperature and leukocyte count in those cases of unfavorable prognosis. The accidental discovery of serology changes as early as the second week of treatment demands study. Why should a strongly positive spinal fluid become negative after only two injections of this fluid?

We feel justified in making further careful study of the action as well as the results in a larger group of younger and better nourished patients with luetin, Coley's fluid, and tryparsamide, in addition to experimental work with the rabbit. Only this and careful observation over a long period of time will give us conclusions soundly based on fact rather than conjecture.

In conclusion, I would like to quote Jose, *Siglo med.*, Madrid: "Can we really hope to change lesions such as are present in the general paralytic by specific drugs? The nature and intensity of certain anatomical changes due to syphilis make restoration impossible. One could not expect to restore a nostril which has been partly destroyed, and one should not disregard similar destruction in the nervous system of the general paralytic."

Other sources of information, not mentioned in the report, are given below.

BIBLIOGRAPHY.

Nerancy: Malarial Treatment of Paresis—Research Information (Paresis). W. F. Prior Company, Inc.

O'Leary, Paul A., Goeckerman, William H., and Parker, Stephen T: Treatment of Neuro-syphilis by Malaria. *Archives of Dermatology and Syphilology*, 13:317-318, March, 1926.

Year Book of 1926, Mental and Nervous Diseases.

Venereal Disease Information, *U. S. Public Health Bulletin.*

A conference with a member of the medical staff of Manhattan State Hospital.

Correspondence

An Antidote for Poison Oak or Poison Ivy.

TO THE EDITOR:

This is the season for universal travel, every one wants to get out in the woods.

It is also the season of luxuriant growth of wild grasses and shrubs, most of which are harmless, but one little vine with clusters of three green leaves exudes a substance that renders many a woods' lover miserable; this is poison oak or poison ivy. The sap from the leaves or the vine, toxicodendric acid, is the offending substance. Some people are immune to it, others are very susceptible.

The trouble usually starts on the back of the hands or wrists, but the poison can be carried to other parts of the body by the clothing or by scratching.

Several years ago I noticed in some journal that tannic acid was the antidote for poison oak and I have been using it ever since with gratifying results. I direct the patient to apply compresses of a saturated solution of tannic acid to the affected part.

This will generally relieve the trouble in a few days.

M. O. BURKE, M. D.

Richmond, Va.

Roentgenology

Roentgen-Ray Diagnosis.

LEOPOLD JACHES, M. D., Radiologist, Mt. Sinai Hospital, New York City.

(*Continued from page* 350)

GASTRO-INTESTINAL TRACT

Following the example set by the American physiologist Cannon, the Munich physician Rieder added a bismuth salt to some pap or gruel and fed the patients this opaque mixture in order to visualize by filling the otherwise transparent stomach and intestines. Elimi-

nating the various bismuth combinations because of their toxicity roentgenologists now use the chemically pure barium sulphate, the emphasis being on the "chemically pure." Failure to take this precaution by the careless or inexperienced has resulted in the death of several patients.

The esophagus, stomach and small intestines are best studied by the barium meal, the opaque substance being administered in one of several vehicles, such as plain water, in which it does not dissolve, in buttermilk, zoolak, malted milk, one of the various cereals, or potato starch. Inventive persons have produced biscuits, gelatins and all sorts of concoctions, either to make the barium more palatable or to relieve the roentgenologist and his assistants from the drudgery of preparing the meal. Suffice it to say that the vast majority of roentgenologists do not take kindly to any of these.

The colon is best studied by the barium enema but may also be examined by the meal. The latter is contraindicated when there is evidence indicative, or suggestive, of even partial obstruction. The barium may harden like brick and may block a small passage. The enema is contraindicated when there is marked bleeding from the bowel, the possibility of perforation, and shortly after operations on the intestine, especially when there have been resections or anastomosis. A suture may give even when no force is used to administer the enema, and peritonitis may result.

Esophagus.—In the esophagus practically all lesions, except shallow ulceration of early carcinoma, can be discovered by the roentgen ray. Carcinoma, which may occur in any portion of the esophagus, is most frequent at the cardia or lower third, less so near the aortic arch. It is generally recognized by the irregular outline of the constriction and the rather insignificant dilatation above it.

Cardiospasm, on the other hand, has a smooth appearance, and the esophagus is enormously dilated, sometimes casting a shadow in the chest even without barium and simulating a mediastinal neoplasm. A barium mixture will help identify it. But even the smaller ones are very much dilated and tortuous.

Diverticula generally occur in the upper part of the esophagus, very rarely at the cardia. Fluoroscopically one can sometimes observe the filling of the diverticulum until it spills over into the normal lumen. Often the diverticula cause obstruction by pressure on the normal lumen. Pressure on the esophagus may also be caused by aneurysms, mediastinal tumors and other extrinsic lesions.

Benign strictures are sometimes encountered: they are generally caused by the swallowing of a corrosive. Metallic foreign bodies are easily recognized; non-metallic, such as fish bones, even beef or chicken bones, and vegetable or fruit seeds as a rule cannot be seen. Occasionally an opaque mixture may help to localize the offender without identifying it.

Stomach.—In the stomach, ulcer and carcinoma are most frequent, syphilis less so, and other neoplasms, such as lymphosarcoma, are rare.

Ulcer is generally characterized by a projection or niche or a flat defect on the lesser curvature: often it is accompanied by an hourglass constriction on the greater curvature opposite. Unless there is a niche, it is not easily recognized. If the flat ulcer is large and the patient is in the cancerous age, neoplasm should be thought of.

Carcinoma generally occurs on the greater curvature; less frequently it is found on the lesser curvature just below the cardia, but it may involve the entire gastric wall. It appears as a defect in the gastric contour and may be shallow or deep, of smaller or greater extent. Peristaltic waves are arrested at the proximal end and can often be seen to continue beyond the distal end of the lesion. Sometimes the neoplasm may reach such size as to block the pylorus and cause partial or total obstruction; at other times the growth may cause an abnormal patency of the pylorus, allowing the food to pour through it into the small intestines, resulting in exceedingly rapid emptying.

There is no characteristic roentgen ray picture of any type of neoplasm. All neoplasms appear as defects in contour. Those on the lesser curvature can often not be differentiated from ulcers.

Syphilis of the stomach also does not have distinguishing features. It simulates ulcers or neoplasms. In one case the syphilitic stomach resembled another which had been corroded by lye; without the history, an etiologic diagnosis could not have been made in either case.

Duodenum.—In the duodenum the most

frequent lesion is ulcer of the first portion, the bulb. To Cole, of New York, belongs the credit for having called attention to the presence of a persistent deformity in the case of duodenal ulcer. Carcinoma of the bulb is rare. It cannot be differentiated from ulcer and is generally diagnosed on the operating table and more frequently by the microscopist.

Of late ulcers and carcinomas of other parts of the small intestine have been diagnosed with increasing frequency. The former are more easily recognized the nearer they are to the stomach, especially if they show a niche; the latter generally show more or less marked constrictions with dilatation of the loops proximal to them. But one should remember that not all constrictions are due to carcinoma; some may be caused by adhesions resulting from inflammation or surgical procedures. A knowledge of the history of the case is important.

Colon.—In the colon ulcerative colitis, diverticula, neoplasms or adhesions can as a rule be recognized. In ulcerative colitis there is absence of haustration when the colon is filled by an opaque enema, and there is a cylindric barium outline of the colon after the enema has been expelled. Diverticula appear as more or less numerous small circular shadows scattered throughout the entire colon after its lumen is empty of the barium ingested or injected. They are most frequent in the sigmoid. Neoplasms manifest themselves by filling defects and constrictions; the latter may also result from adhesions.

One thing must be borne in mind: that lesions of the colon occurring in the lower sigmoid, unless they are obstructive, may be overlooked. They are often hidden by the filling of the rest of the sigmoid. Various devices are resorted to, among others placing the patient in the Trendelenburg position. They sometimes help.

In making gastro-intestinal examinations it is important to combine fluoroscopy with roentgenograms. Palpation while screening will often eliminate an apparent constriction or filling defect. Duodenal bulbs may not show up on a large number of films, but may be discovered very quickly by fluoroscopic manipulation.

Gall-bladder.—The gall-bladder was the great bone of contention between two camps of roentgenologists, those who claimed ability to demonstrate the gall-bladder and stones when present in almost every patient, and those who maintained that gall-stones could be demonstrated only when they contain the necessary quantity of calcium salts and that a gall-bladder, if and when demonstrated, did not necessarily mean a pathologic one. The discussion went on fast and furious until about three years ago, when Graham, of St. Louis, and his co-workers announced the successful result of their painstaking search for a chemical that has a selective action on the liver and from there is excreted into the gall-bladder. A few of the roentgenologists who previously claimed the ability to demonstrate gall-stones and the pathologic gall-bladder in 100 per cent of the cases still belittle the value of the Graham test. But their number is rapidly diminishing. One of the things that the Graham test has settled above all is that the so-called gall-bladder shadows that appear on films when no dye was given are, more often than not, something else. In many cases where the actual gall-bladder shadow was demonstrated by the dye another pyriform density can be seen which in the pre-Graham days might have been called a gall-bladder. As long as the dye was administered intravenously the method was applied sparingly, but now since the oral administration of tetraiodophenolphthalein has proved successful, no suspected gall-bladder need go unexplored.

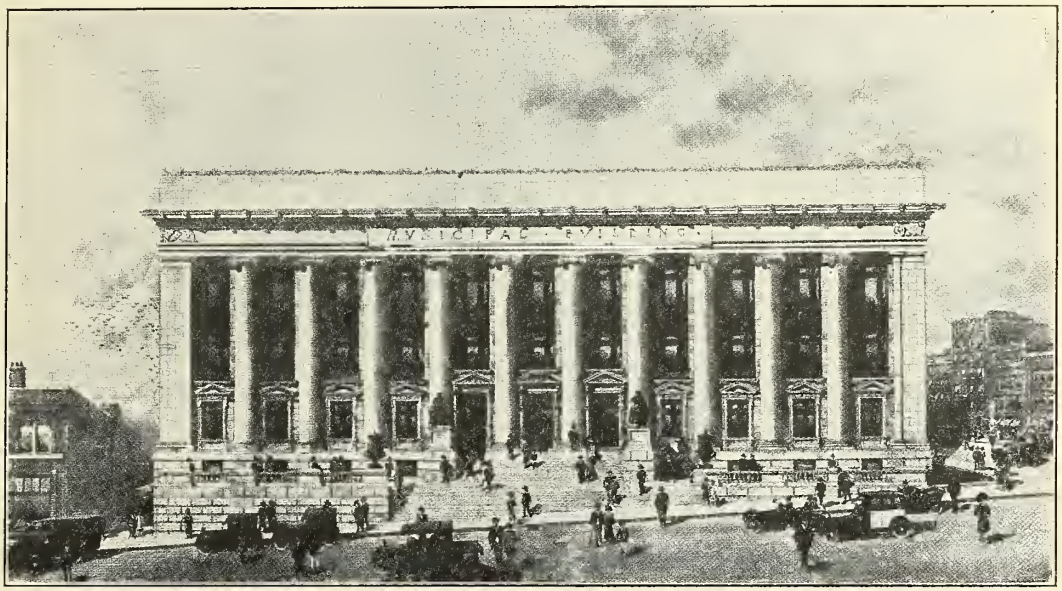
This method demonstrates the size, shape, contour and position of the gall-bladder, and whether there are constrictions, kinks or other deformities. Normal emptying and filling time can be studied. The presence of radiotransparent gall-stones can be shown by areas of transparency within the opaque gall-bladder shadows. Opaque gall-stones can be more certainly localized in the gall-bladder, and sometimes additional transparent stones are revealed.

A word of caution: Transparencies may not be due to gall-stones, but to gas in the overlapping intestines, and deformities may be due to the position of the patient and not to adhesions. Experience alone enables one to make the differentiation. Nonfilling of the gall-bladder with dye means a pathologic condition in a large percentage of the cases in which it occurs. At least two attempts to fill it should be made before a definite pathologic diagnosis is made.

(To be continued).

OUR CONVENTION CITY

Danville, Virginia



Municipal Building.

The City of Danville, incorporated in 1793, is located in the southern part of Pittsylvania County, the largest county in the state, and in the heart of the justly celebrated Piedmont Section. The city and its suburbs have a population of over 35,000 people.

Danville is situated on the North and South Main Line of the Southern Railway, is the western terminal of the Richmond and Norfolk Division of the Southern Railway, the eastern terminal of the Danville & Western Railway, and has forty-seven passenger trains daily. Good roads radiate from Danville in all directions and licensed bus lines, making forty trips daily, run into Danville from all the nearby cities and towns.

The Dan River, on whose banks the city is located, has a partially developed water power of forty-four feet fall, within easy reach of the city. With an elevation of six hundred feet above sea level, in view of the nearby Blue Ridge Mountains, the climate is delightful all the year, the temperature ranging from twenty degrees to ninety degrees. Rainfall is sufficient but not excessive, the average being 3.70 inches.

The water supply of Danville is ample for a city of 75,000 people. Its lightness and pur-

Hill Top Sanatorium.

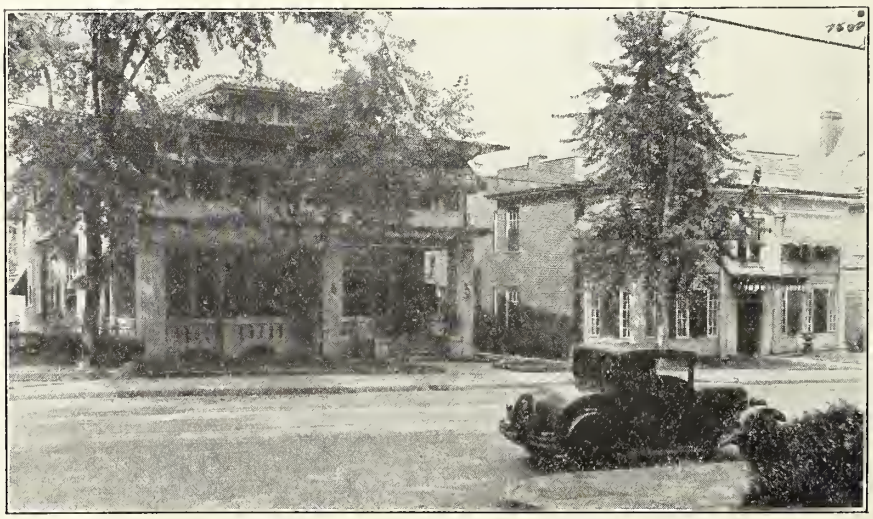
Memorial Hospital.

ity make it excellent for drinking and household purposes.

Danville owns and operates her water, gas, electric light and power plants, the products of which are furnished at an exceedingly low rate. In excess of the city's needs, there is an ample supply for manufacturing purposes. Danville has one of the lowest tax rates in the state.

Danville has three parks, the largest of which is known as Reservoir or Ballou Park.

Danville is one of the largest bright loose leaf tobacco markets in the world, with well equipped establishments for the sale and handling of the bright types of tobacco, known the world over as "Virginia Tobacco." There are ten immense warehouses here for the sale of leaf tobacco at auction. The city's storage capacity is one hundred thousand hogsheads and many of the largest plants for rehandling and redrying tobacco in the South are located here. The sales of loose leaf tobacco at auction were 56,022,169 pounds for the season of 1927-1928, for the sum of $11,865,488.44. The 1927-



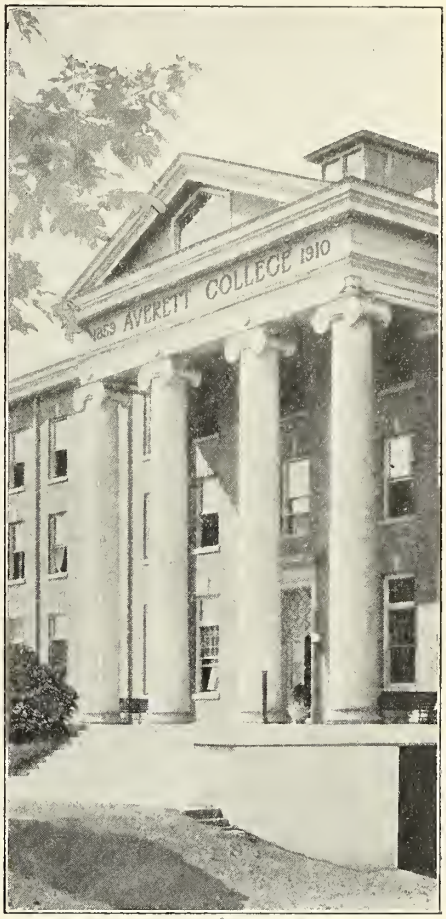
Edmunds' Hospital.

1928 season was 5,742,129 pounds higher than the preceding season. In addition to the sales by the warehouse, approximately fifty million pounds of tobacco from other markets are shipped into Danville each season for redrying and storing.

Danville has one of the largest cotton mills in the world, the Riverside and Dan River Cotton Mills, a Danville institution, originated and still controlled by progressive Danville citizens. These mills are valued at thirty million dollars, employ six thousand people, consume nearly fifty million pounds of cotton annually, producing over one hundred and fifty million yards of cloth per year, worth close to twenty million dollars, and their annual payroll is five million dollars. Danville is recognized as one of the leading manufacturing cities in the State of Virginia. Among her leading manufactured products are cotton goods, hosiery, broad silks, overalls and garments, elevators, flour, feed, tobacco, furniture, paint, sash, doors and blinds, harness, wagons, truck bodies, lithographing, ice, ice cream, soft drinks, butter, etc.

Danville has two national and four State banks with resources totalling over sixteen million dollars. There are several Building and Loan Associations in the city which render efficient service.

The public school system of Danville is ably and efficiently conducted, with modern buildings well located, and well constructed, with



Averett College.

Randolph-Macon School for Girls.

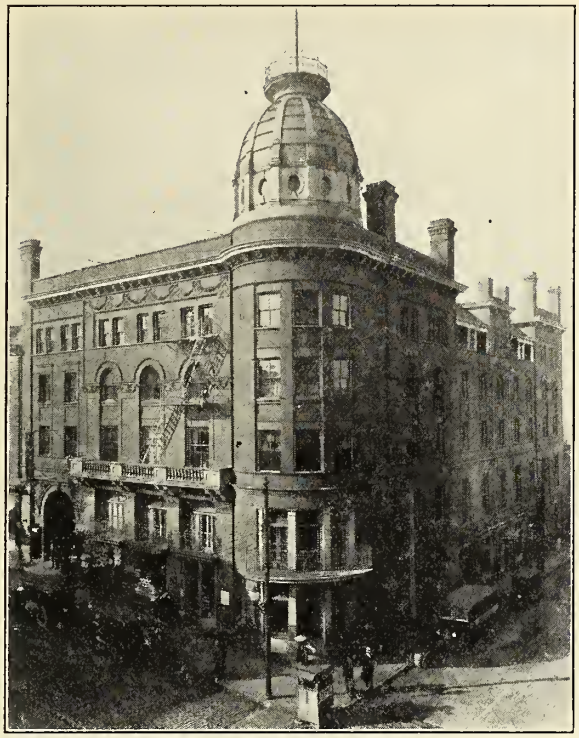
Y. W. C. A.

$400,000.00 of new buildings and improvements just completed; an up-to-date high school, two junior high schools, seven elementary schools and two night schools, with a fine teaching organization. In addition to the public school system there are two excellent schools for young women, one fine military school for boys and young men, and other private schools.

Averett College, formerly known as Roanoke College, now entering its seventieth year, is a standard Junior College. This institution for young women meets the standards of the State Board of Education and of the best four-year colleges. Work in high school, and in the first two years of standard college work, is offered along with special courses in music, art, expression, home economics and business courses. A new fire-proof science and music building is being completed this summer. The property is valued at $350,000. The attendance during the past twelve months was 380. All rooms in the dormitories are full and the outlook is promising. Last session one hundred and seventy-eight day students attended from the city of Danville.

In 1897 the Board of Trustees of Randolph-Macon Woman's College established in Danville a preparatory school for girls. It was first named Randolph-Macon Institute, but the name was later changed to Randolph-Macon School for Girls. The main building, with its beautiful Southern architecture, is on the main street of the city. To its side and rear the large, beautiful campus provides facilities for tennis, basket-ball, golf, track, etc. The art studio and student club house are located near the main building. The school has both boarding and day pupils, but the primary department is composed of local

Hotel Danville—Convention Headquarters.



Hotel Burton.

pupils only. Excellent college preparatory and general academic courses and splendid departments of music, art, and expression have gained for the school an enviable reputation. Visitors are always welcome.

Danville has forty churches of various denominations, many of them new and handsome. The city has a high moral and religious tone. There are modern and well equipped Y. M. C. A. and Y. W. C. A. buildings. The free public library has its home in the Confederate Memorial Mansion, the "Last White House of the Confederacy."

There are two progressive, ably edited, daily newspapers, the "Danville Register" and the "Evening Bee," also two weekly denominational papers.

Hotels: The Hotel Danville, Hotel Burton, Hotel Leeland, Hotel Stonewall and the Hotel Pittsylvania, with a total capacity of over one thousand people, furnish ample accommodations for the traveling public.

Danville has three general hospitals, the Hughes' Memorial, recently completed and modern in every respect, the Edmunds' Hospital, the Providence Hospital (colored), and Hill Top Sanatorium, for tubercular patients, which is beautifully located one mile from the city.

Danville has an up-to-date and well equipped Health Department, with ample offices, clinic rooms and laboratories in the new Municipal Building. Regular clinics are conducted by well known specialists in tubercular diseases, pediatrics and orthopedics.

The Hughes' Memorial School, recently completed, is situated five miles from town and furnishes a home and school for destitute and needy orphan children of Virginia and North Carolina.

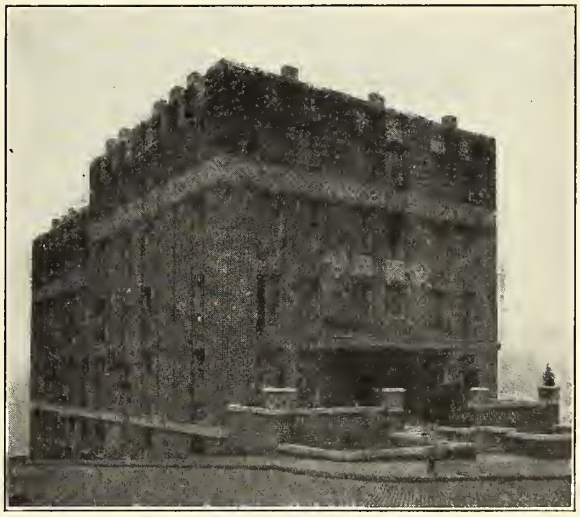
Organizations.

Business: Chamber of Commerce, Retail Merchants, Community Stores, Business and Professional Women's Club.

Civic: Rotary, Kiwanis, Lions.

Social and Recreational: Golf Club, Country Club, Tuscarora Club, Elks Club, and the Wednesday, Shakespeare and Garden Clubs for Ladies.

Danville, a city with beautiful homes and hospitable citizens, welcomes the members of the Medical Society of Virginia, their wives and friends.



Elks' Home.

Proceedings of Societies

Medical Society of Northern Virginia.

The Warren-Rappahannock-Page Medical Society met at Flint Hill, August the 14th, with the following doctors in attendance: Drs. H. I. Pifer, P. W. Boyd, J. E. Harris, E. C. Stuart, R. M. Glass and H. H. McGuire, of Winchester, C. O. Dearmont, of White Post, D. M. Kipps, E. L. Grubbs, L. F. Hansbrough and W. J. Olds, of Front Royal, E. W. Brown, of Washington, Va., E. R. Browning, of Flint Hill, J. R. Boldridge, of Hazle River, and George H. Long, of Luray. The subject of special interest at this meeting was as to the amalgamation of the medical societies of that section into one live organization. After a free discussion, it was decided to band together the counties of Shenandoah, Frederick, Clarke, Warren, Rappahannock and Page and to name this society the "Medical Society of Northern Virginia." The election of officers was next in order and it was decided that the officers of the Warren-Rappahannock-Page Society continue for the remainder of the year. They are Dr. Virgil Hammer, Luray, president; Dr. Reginald Munson, Linden, vice-president, and Dr. George H. Long, Luray, secretary-treasurer.

It was decided to hold the next meeting in Winchester on the second Tuesday in November.

The Dickenson-Buchanan County Medical Society

Met at Haysi, Va., July the 19th. In the absence of the president, Dr. J. C. Moore, of Fremont, the meeting was called to order by the vice-president, Dr. J. G. Storie, of Grundy. An address of welcome was given by Mr. Z. L. South, of Haysi, and response was made by Dr. Storie. Dr. A. S. Richardson, O'Keeffe, W. Va., spoke on "The Progress of the Country in the Mountains of Southwest Virginia", and Dr. W. R. Culbertson, of Norton, read a paper on "Sanitary Conditions in the Country". After these, an old fashioned dinner was served at the Haysi Hotel. Following dinner, papers were read by Dr. G. W. Botts, of Norton, on "Cancer of the Larynx", and by Dr. L. W. Newland, Splashdam, on "Digitalis Therapy". All of these papers had good discussions. It was decided to hold the next meeting in the offices of Dr. J. G. Storie, at Grundy, on October the 24th.

Although a small society and the youngest in the "county society family" of Virginia, this meeting shows that it is wide-awake organization.

The Augusta County Medical Association

Held its regular quarterly meeting in Waynesboro, Va., August the 1st. After clinical case reports by Drs. Kenneth Bradford and M. J. Payne, the election of officers was held, vice-president Dr. R. S. Griffith, being in the chair. Dr. George F. Hollar, Waynesboro, was elected president; Drs. Q. H. Barney, Mt. Sidney, Wm. Luders, Staunton, and J. E. Womack, Staunton, vice-presidents; Dr. Wm. F. Hartman, Staunton, secretary; Dr. T. M. Parkins, Staunton, treasurer; and Drs. M. J. Payne, Staunton, and Ernest Mosby, Waynesboro, censors. Following dinner, talks were given by several members. The next meeting will be held on the first Wednesday in November.

It is interesting to note that this society was organized in September, 1904, and three of the charter members, Drs. R. S. Griffith, W. F. Hartman and M. J. Payne, attended this meeting. The society now has a membership of thirty-eight. Twenty-eight of its members have died or moved away since 1917 which indicates the changes constantly taking place.

The Floyd County Medical Society,

At its meeting held in August, elected Dr. J. M. Harman, Floyd, delegate, and Dr. J. L. Harvey, Simpsons, alternate, from their Society to the Danville meeting of the State Society. It was decided that in the future meetings would be held quarterly instead of upon call of the president. Dr. J. M. Harman, Floyd, is president, and Dr. R. T. Akers, Alum Ridge, secretary of the Society.

The Lee County Medical Society,

At its stated meeting at Pennington Gap, Va., August the 27th, elected Dr. P. D. Pence, St. Charles, delegate, and Dr. Geo. W. Young, Pennington Gap, alternate, from that Society to the Danville meeting of the State Society. Dr. P. D. Pence is president, and Dr. W. J. Innes, Pennington Gap, secretary.

The Fairfax County Medical Society

Met in Herndon, Va., on Thursday, August 2, with Dr. William Meyer, president of the organization as host. Others assisting Dr. Meyer in entertaining were Dr. Charles F. Russell, Dr. C. Augustus Simpson, of Washington and Herndon, Dr. J. T. Jones and Dr. E. C. Schull.

A paper on "Syphilitic Aortitis" was read

by Dr. H. H. Halley and the discussions were made by Dr. Swain, Dr. Stacy Noland and Dr. Schoenfeld. Dr. Calhoun Stirling read a paper on "Prostatic Enlargement", Dr. Foote leading the discussion.

At the election of officers, Dr. Charles F. Russell, of Herndon, aged eighty-nine years, was chosen president; Dr. S. B. Moore, of Alexandria, vice-president; Dr. Oscar C. Wilkinson, of Washington, second vice-president; Dr. William P. Caton, of Accotink, secretary and Dr. F. M. Brooks, of Fairfax, treasurer.

Dr. Brooks was appointed delegate and Dr. Edward McCarthy alternate to the meeting of the Medical Society of Virginia to be held in Danville in October.

They claim to have as their president, the oldest M. D. in the United States who still practices medicine—Dr. Charles F. Russell.

Fauquier and Loudoun County Medical Societies Entertained.

On July 27th, Dr. and Mrs. W. O. Bailey entertained members of the Fauquier and Loudoun County Medical Societies and several doctors from Washington, D. C., at their home in Aldie, Va. About fifty of their friends among the laymen were also invited for the supper and entertainment. The doctors took this occasion to have a medical meeting, at which Dr. John A. Gibson, of Leesburg, president of the Loudoun County Medical Society, presided.

Lynchburg and Campbell County Medical Society.

Dr. J. P. Greenhill, associate of Dr. DeLee's at the Chicago Lying-In Hospital, presented a paper on "Conduction of the Second Stage of Labor" and gave a lantern demonstration of operations at the Lying-In Hospital, at the meeting of this Society in Lynchburg, Va., September the 3rd.

DIFFICULTIES

The harder the thing is to do
  The greater the joy when it's done,
The farther the goal is from you
  The sweeter the thrill when it's won.

The deeper the problem, the more
  Is the joy when you've puzzled it out
The seas that run farthest from shore
  Are only for ships that are stout.

Men weary of lessons they've learned
  And tire of the tasks they can do,
Life it seems is forever concerned
  With blazing a path to the new.

So stand to the worry and care,
  Everlastingly keep going on,
The greater the burden you bear,
  The greater the joy when it's done.—*Guest.*

Woman's Auxiliary, Medical Society of Virginia

DOCTOR: PLEASE CALL ATTENTION OF YOUR WIFE TO THIS DEPARTMENT.

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary and Treasurer, Cottage Toll Road, R. F. D., Norfolk, Va.

The Danville Meeting.

As the time draws near for the annual meeting of the Medical Society of Virginia, the women of the Danville Auxiliary are busy planning for the entertainment and pleasure of their guests. Headquarters will be in the new Hotel Danville, and all the scientific meetings will be centered in and around the hotel.

The Woman's Auxiliary meetings will open on Tuesday, October 16th, with a luncheon given by Mrs. T. W. Edmunds, Entertainment Chairman and President of the Danville Auxiliary, in honor of the two State Presidents, Mrs. Southgate Leigh, of Norfolk, and Mrs. Francis W. Upshur, of Richmond, and to the members of the Executive Board, a meeting of which will be held immediately after the luncheon.

There will be another luncheon on Wednesday, given by the Danville Woman's Auxiliary, honoring the two invited guests, who are members of the National Board, Mrs. Seale Harris, of Birmingham, a past President, and Mrs. Morris Fishbein, of Chicago, and honoring all visiting ladies.

There will be a dance and reception on Wednesday night, with a drive and other entertainments on Thursday.

The Woman's Auxiliary to the Medical Society of Virginia extends a cordial invitation to ever woman member of the doctors' families to come to this meeting. It is hoped that you will begin now to make arrangements and will urge your doctor to bring you to Danville, especially on Wednesday, October 17th, for that is "Auxiliary Day" and we want you to hear the address of your two Medical Presidents, Dr. J. W. Preston and Dr. J. Bolling Jones, also of four of our guests, Dr. and Mrs. Seale Harris and Dr. and Mrs. Morris Fishbein.

If you are not a member of the Auxiliary,

come and join; then you will realize the pleasure obtained from contact with the splendid women from all over our State.

The National Woman's Auxiliary has made such wonderful progress, and the value of its activities has been so fully demonstrated that today the Auxiliary is deemed a necessary feature, not only of the A. M. A., but of every Medical Society in the country. The Auxiliary has been the agency in bringing about more friendly relations and a better understanding between our members. Its ministrations have been altogether useful, and this has been in evidence not only at the annual conventions, but through the work of the Association during the intervening months. The strength of numbers and the power of organized effort has brought most wonderful results.

The Auxiliary is apart from other organizations in that it serves only one, the medical profession, and will avoid all entangling alliances. It has established a friendly and co-operating relationship with the National Woman's organizations all over our country, representing three and one-half millions of intelligent, capable women; so that, through the judicious influence of the doctors' wives in these organizations, dependable health programs can be provided, instead of irrational propaganda of various cults.

The opportunities for service are unlimited; our task has only begun. The lack of understanding on the part of the doctors, and it is useless to attempt to interest the wives unless the men feel there is a need for the Auxiliary, has delayed the growth in the County organizations in Virginia. If every physician in the State, and almost as many wives, could feel and realize the wonderful opportunity for service, what a tremendous power for good they could wield!

Women, let us go to this meeting with open hearts and minds, ready to co-operate and help Virginia hold up her traditions. We must not say that "our county is over organized". We, the doctors' wives, are a part of every club and organization in our county. It is this influence as doctor's wives that is needed for the good of the medical profession and the people.

PROGRAM

Tuesday, October 16th

Luncheon and Executive Board Meeting.

Wednesday, October 17th

General meeting, 9:30 A. M., at the Y. M. C. A.
Invocation.
Address of Welcome by Mrs. T. W. Edmunds.
Response.
Addresses by invited guests:
Dr. Seale Harris,
Dr. Morris Fishbein.
By Medical Presidents:
Dr. J. W. Preston,
Dr. J. Bolling Jones.
Address—Mrs. Seale Harris, Birmingham, Past President National Auxiliary.
Adjournment for lunch.

All visiting ladies will be guests of the Danville Woman's Auxiliary at lunch.

Afternoon Session
2:30 P. M.

Address—Mrs. Morris Fishbein, Chicago, Member of National Executive Board.
Reading of minutes of last meeting.
Report of minutes of Executive Board.
Report of Secretary.
Report of District Chairmen.
Report of Delegates to the American Medical Association.
Reports of Standing Committees:
Health Education,
Hygeia,
Organization,
Legislative,
State Editor,
Parlimentarian,
County Presidents.
Reports of Special Committees.
Report of Nominating Committee.
Installation of President.
Address of President.
Report of Resolutions' Committee.
Adjournment.

Thursday, October 18th.

Executive Board meeting with President and Newly Elected Officers.

The Truth About Medicine

In addition to the articles enumerated in our letter of June 29th, the following have been accepted:

Chicago Dietetic Supply House.
Cellu Soy Bean Flour.
Cellu Soy Crisp.

Mead Johnson & Co.
Mead's Powdered Boilable Lactic Acid Milk.

Parke, Davis & Co.
Cotton Protein Extract Diagnostic—P. D. & Co.; Cottonseed (Cake) Protein Extract Diagnostic—P. D. & Co.; Goat Hair Protein Extract Diagnostic—P. D. & Co.; Human Hair Protein Extract Diagnostic—P. D. & Co.; Kapok Protein Extract Diagnostic—P. D. & Co.; Peptone Protein Extract Diagnostic—P. D. & Co.; Poplar Pollen Protein Extract Diagnostic—P. D. & Co.; Sunflower Pollen Protein Extract Diagnostic—P. D. & Co.; Sweet Vernal Grass Pollen Protein Extract Diagnostic—P. D. & Co.

NEW AND NONOFFICIAL REMEDIES

Paroidin. — Parathyroid Extract — Hanson. — An aqueous solution containing the active principle or principles of the parathyroid gland of cattle and having the property of relieving the symptoms of parathyroid tetany and of increasing the calcium content of blood serum. It is standardized by its capac-

ity to increase the blood serum calcium in parathyroidectomized dogs. Parodin is of pronounced and definite value in the treatment of tetany. To guard against the serious consequences of hyperthyroidism, excessive doses of paroidin must be avoided and large doses of the preparation must not be administered without estimation of the blood serum calcium. Paroidin is marketed in 5 c.c. ampules, each c.c. containing 150 Hansou units. Parke, Davis & Co., Detroit.

Squibb's Vitavose.—A maltose-dextrin preparation representing the water-soluble extractives of malted wheat germ. It is composed, approximately, of maltose, 38 per cent; dextrins, 20 per cent; soluble proteins, 8 per cent; soluble amino and other nitrogenous substances, 7 per cent; mineral salts, 4 per cent; moisture, 3 per cent. It is standardized physiologically to contain at least 100 times the amount of the antineuritic factor (vitamin B) contained in fresh, raw, certified, whole cow's milk. Vitavose is used as an adjunct in the diet of children and invalids and where there is a need for greater amounts of vitamin B than are furnished by the individual's customary diet. E. R. Squibb & Sons, New York.

Gentian Violet Capsules—Swan-Myers, 1 grain.—Each keratin coated capsule contains gentian violet medicinal (New and Nonofficial Remedies, 1928, p. 172) 0.65 Gm.; with lactose. Swan-Myers Co., Indianapolis.

Capsules Ephedrine Hydrochloride—Pemco, ¼ grain.—Each capsule contains ephedrine hydrochloride—Pemco (New and Nonofficial Remedies, 1928, p. 176 ¼ grain. Prophylactoc Mfg. Co., Chicago.

Capsules Ephedrine Hydrochloride—Pemco, 0.3 Gm. —Each red capsule contains ephedrine hydrochloride —Pemco (New and Nonofficial Remedies, 1928, p. 176) 0.3 Gm. Prophylacto Mfg. Co., Chicago. (Jour. A. M. A., July 7, 1928, p. 28).

PROPAGANDA FOR REFORM

Vitalipon Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Vitalipon is claimed to be a 5 per cent solution in olive oil of lipoids extracted from vegetable and animal embryonic organs with the addition of cajeput oil. Consideration of Vitalipon was requested by C. G. Crosby, New York. In the material submitted in favor of Vitalipon, the statement was made that "Vitalipon is the outcome of over thirty years' research work by Dr. O. Schaer, of Zurich, Switzerland, in his efforts to develop a cure for carcinoma." In addition to the brief statement of composition, uses, etc., submitted by C. G. Crosby, three documents written by Dr. Schaer were also submitted. The Council found Vitalipon unacceptable for New and Nonofficial Remedies because it is an unscientific and indefinite mixture marketed under an uninforming proprietary uame and with unwarranted therapeutic claims. (Jour. A. M. A., July 7, 1928, p. 29).

Diphtheria Toxoid.—In the hands of Ramon and his co-workers in Paris, diphtheria toxoid has given satisfactory results in the prevention of diphtheria. According to reports it is being used on a large scale in France. The obvious advantage of diphtheria toxoid over antitoxic serum is that toxoid does not contain any protein of any foreign animal species. The H. K. Mulford Co. is supplying the product and has requested its consideration by the Council on Pharmacy and Chemistry. (Jour. A. M. A., July 7, 1928, p. 45).

Combinations of Cod Liver Oil and Phosphorus Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that the use of elementary phosphorus iu the treatment of rickets is based on the observations of Wegner in 1874, that the administration of white phosphorus in minute amounts caused the formation of a dense band at the epiphyses of the long bones. Subsequently conflicting reports as to the value of phosphorus in rickets were published. Death occurred in several instances from excessive doses of phosphorus. Practically all those claiming to have obtained good results from the use of phosphorus used it in combination with cod-liver oil (now known to be a specific in rickets). The accumulated evidence is unconvincing as to the value of phosphorus; furthermore, it is known that phosphorus is a dangerous drug and the routine administration of phosphorus in combination with cod-liver oil is to be discouraged. In consideration of the new evidence and the opinions based thereon, the Council decided that preparations of cod-liver oil containing phosphorus are unacceptable for New and Nonofficial Remedies as being unscientific and inimical to the best interests of the public and the medical profession. The Council decided to omit from New and Nonofficial Remedies all mixtures containing phosphorus in combination with cod-liver oil. (Jour. A. M. A., July 14, 1928, p. 97).

Iosaline Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that according to information supplied by the Iosaline Co., Inc., Iosaline is a mixture containing potassium iodide, equivalent to 5 per cent of iodine; menthol, 1 per cent; methyl salicylate, 12 per cent; alcohol, 70 per cent. Only indefinite statements of composition appear on the label and iu the advertising. The Council reports that, although it is well known that potassium iodide is not absorbed to any extent when applied to the skin, the advertising claims that the iodine of Iosaline is readily absorbed. The Council held the preparation unacceptable for New and Nonofficial Remedies because the quantitative composition is not declared on the label and in the advertising; because its name is not descriptive of its composition, and because it is sold with unwarranted therapeutic claims. (Jour. A. M. A., July 21, 1928, p. 173).

The Iron Content of Foods.—As a carrier of oxygen and as an activator of cell functions, iron has significance out of all proportion to the amount in the body—less than a tenth of an ounce, or the weight of a cent. The function of iron in the body has been responsible for considerable pseudo science and actual quackery. The billboards have sounded the call to have one's iron day by day. As regards the possibility of a shortage in the iron intake through food, Sherman states that the typical American dietary does not furnish any such surplus of iron as would justify the practice of leaving the supply of this element entirely to chance. Rather, foods should be selected with some reference to the kinds and amounts of iron compounds which they contain. Arranged in descending order as to their irou content, as determiued by recent analyses, the classes of foods come as follows: dried legumes, green leafy vegetables, dried fruits, nuts, cereals, poultry, green legumes, roots and tubers, non-leafy vegetables, fish and fruits. Different samples of the same food material show great variations in their iron content. Cabbage, celery and head lettuce, vegetables coutaining little chlorophyl, were found to be low in iron. Salt water fish contain more iron than fresh water fish. Fish with dark-colored tissue contain more iron than those with light-colored tissue. The dark meat of poultry is likewise higher in iron thau the light meat. (Jour. A. M. A., July 28, 1928, p. 250).

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Editorial

Our Centenarian Medical Schools.

The coming Fall marks the beginning of another college session. Medical students will foregather in September at the colleges in America to begin another year's collegiate course in the fundamentals of the science and art of medical knowledge. Some will be just beginning, having had at least two years of college work, some will be entering upon the last year of college work.

It is impressive to realize that American doctors have been trained, in large part, in schools in America. For more than a hundred years, in fact, in the instance of the University of Pennsylvania, for one hundred and sixty-two years, American doctors have been trained in the beginnings of medical knowledge in American colleges. It is furthermore emphasized in this connection, that there are now ten American medical colleges that have been teaching medical students for a century, for practice in this country.

To Virginians it is interesting to know that of this venerable group of medical colleges the University of Virginia Medical School occupies no inconspicuous place. This venerable and honorable institution, founded by Thomas Jefferson, and adhering to high traditions and practices in classical and scientific education, through the generations of the past, is to be congratulated upon the coming session, particularly because of the fact that the coming year is the one-hundredth of its existence. During these great years, since 1828-29, this medical school of the University of Virginia has turned out young men who have taken foremost rank in medical practice in America and its record stands equal in quality to America's best scholastic achievements in this as well as other fields of knowledge.

It is also worthy of comment that another medical college in Virginia is soon to enter the centenarian group. The Medical College of Virginia, at Richmond, begins its ninety-first year. This college has done excellent teaching and at no time has it been more to be congratulated than now, under the splendid achievement of its teaching in the past few years. At both of these Virginia medical schools recent plans have been inaugurated that give promise of increased excellence in the courses and facilities offered and practiced in teaching medicine. Every Virginia physician who feels the highest devotion to the mission and service of medical practice must possess a keen interest in the State's welfare in the matter of medical teaching. It is, therefore, interesting to note that, in matter of age and service, our medical schools, while not as rich and well endowed as some sister institutions to the North of us, have done worthwhile service for generations past.

The following tabulation will be of interest in noting the time of service of centenarian medical schools in this country. This month the University of Pennsylvania School of Medicine begins the one hundred and sixty-third session; Harvard University Medical School begins the one hundred and forty-sixth session; University of Maryland School of Medicine and College of Physicians and Surgeons begins the one hundred and twenty-second session; Columbia University College of Physicians and Surgeons begins the one hundred and twenty-first session; Yale University School of Medicine begins the one hundred and fourth session: Jefferson Medical College begins the one hundred and fourth session: University of Virginia, Department of Medicine begins its one hundredth session; the Medical College of the State of South Carolina begins its one hundredth session; and the University of Georgia, Medical Department, begins its one hundredth session*.

*See recent issue J. A. M. A.

Yellow Fever.

When Aristides Agramonte* reviews research in yellow fever, medical men may well give heed.

*For review see Annals of Internal Medicine, Aug. 1928.

One has only to recall that for four hundred years, yellow fever was a dreaded scourge of the human race in certain tropical areas of the world; that 50 per cent mortality marked its scourging incidence; that such cities as Havana, Vera Cruz, Panama, Guayaquil, and Rio de Janeiro were plague spots for generations; that appalling epidemics visited Philadelphia, in 1699, 1741, 1747 and 1762, imported from centers of the south, that ignorance of the epidemiology and etiology brought death to many hundred thousands, in order to respectfully attend upon a summary and read with interest a review of the work and discoveries that have brought about its practical annihilation within the short space of a score of years. While the causative agent remains unknown, it is upon the following items of knowledge that this dreadful malady has made former scourge spots of the south winter resorts and has brought security for life and commerce:

I. Yellow fever is transmitted by the sting of mosquitoes called Aedes Aegypti.

II. The mosquito becomes infected only when it stings the yellow fever patient during the first three days, possibly four days, of the disease.

III. The mosquito becomes infective only after the tenth day, in winter probably the twelfth day, of taking the blood from the yellow fever patient.

IV. The period of incubation in man does not extend beyond six days.

V. Articles of clothing or excreta of yellow fever patients are not infective.

Tularemia (Francis' disease, Rabbit Fever, Deer-Fly Fever).

Said to be "the first American disease", which is to say, that it is the first disease discovered by an American physician, Tularemia, is so-called, because McCoy and Chapin, in 1911, isolated the specific organism from ground squirrels dying of epidemic and plague-like illness in the County of Tulare, California. Hence from the place of the discovery of the specific organism of this disease it has derived its name—Tularemia. To Edward Francis of the United State Public Health Service, should go the larger credit for discovering the disease, for hooking up the ragged symptomatology of the plague-like disease of rodents, and the deer-fly fever of man described by Pearse in 1910. Francis, in 1919, began the study of a severe infectious disease of man, then called "deer-fly fever". He isolated from seven humans, ill with deer-fly fever, the organism discovered in Tulare County by McCoy and Chapin. Rabbit fever of market men, known among them for twenty-five years, has been shown by Francis to be due to Bacterium tularense.

Walter M. Simpson, Dayton, Ohio, has contributed an excellent paper* on Tularemia. Herein one may find historical references mentioned above; a discussion of the mode of transmission; clinical manifestations; clinical types (1) ulcero-glandular, (2) oculo-glandular, (3) glandular, (4) typhoid type; diagnosis and treatment. In addition to the above subjects, one may follow the clinical and pathological study of forty-eight non-fatal cases and one rapidly fatal case with autopsy. A full bibliography is attached to this excellent paper. The occurrence of this disease in Virginia suggests the editorial reference here, in order to emphasize among practitioners of the State the incidence of tularemia and to suggest by repetition, symptoms and diagnosis. Some of the items in the summary of Simpson's paper may be quoted:

(1) Up to May 1, 1928, reports of 613 authentic cases, including Simpson's series, have come to the attention of Francis. Cases have been reported in every state in the Union, except the New England States, Delaware, Wisconsin and Washington.

(2) There have been twenty-three recorded deaths.

(3) It has been demonstrated that the organism will pass through the unbroken skin.

(4) The disease known by ophthalmologists as Parinand's disease is similar to conjunctivitis tularense.

(5) Diagnosis is usually simple if one has a suggestive history, together with influenza symptoms. Confirmation is best made by specific agglutination tests at some laboratory provided with Bacterium tularense antigen.

(6) There is no specific treatment. The effect of immune serum, says Simpson, will be reported later.

*See Annal of Internal Medicine. June, 1928.

The Danville Meeting.

Members of the Medical Society of Virginia may expect an unusually interesting and profitable meeting at Danville. The doctors of Danville will extend a warm welcome. Every effort will be made to make visitors to this city

comfortable. Every convenience possible will be placed at the service of Medical Society of Virginia. The hotel accommodations will be adequate. Meeting places will be suitable and provided with facilities for general and committee meetings. Space for exhibits will be provided. The exhibit of the medical profession, displaying scientific work, will be worth careful inspection. This feature alone will stand out as especially noteworthy at this session and the exhibit hall will properly house this rather new feature of our State Society. Physicians, surgeons and hospitals, as well as medical colleges of the State, will take part in presenting exhibitions of scientific work in the fields of pathology, clinical medicine and surgery.

The clinics on Tuesday will be interesting and all members are urged to participate by attendance.

Invited guests, symposium and voluntary papers prepared by members, assure our membership of a program of unusual interest.

News Notes

Fall in Line for Danville!

Our Danville meeting of the Medical Society of Virginia is just a little more than a month off and members are urged to plan their work so that they may attend this, the second meeting of the Society ever held in that city. Dates are October 16, 17 and 18, headquarters, the Hotel Danville, and president, Dr. John W. Preston, of Roanoke. In this issue, we present a most interesting, illustrated "write-up" of our Convention City. Read it and "fall in line for Danville!"

There will be much to entertain the early comer. On Tuesday morning there will be the usual golf tournament and we understand a prize is to be given. That morning, also, the Virginia Hospital Association, of which Dr. J. M. Shackelford, Martinsville, is president, will have its annual meeting. At 2 P. M., the House of Delegates will hold its first meeting in the Ball Room of the Hotel Danville. Each component society is urged to have representatives at this and other meetings of the House. This same afternoon, interesting clinics will be held in the City Health Department Clinic rooms in the Municipal Building from 2 to 6 P. M. This in an innovation which promises much of interest for the busy doctor. The first general meeting will be held Tuesday evening at 8 P. M., at which time there will be addresses by the president, by Dr. Seale Harris, of Birmingham, on "The Business of Keeping Well", and by Dr. Dean Lewis, of Johns Hopkins University, Baltimore. Other guests who will speak at later sessions are Dr. E. Starr Judd, of the Mayo Clinic, on "Dudodenal Ulcer", and Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, on "The Prolongation of Life".

The subject selected for general discussion this year is "The Anemias". The division of this subject, Physiology of the Anemias, Normal and Pathological, will be presented by Dr. Regena Beck, Richmond; Symptomatology and Diagnosis by Dr. C. D. Nofsinger, Roanoke; Medical Treatment by Dr. J. C. Flippin, University; and Surgical Treatment by Dr. R. L. Payne, Norfolk. Dr. Walter B. Martin, Norfolk, will open discussion on these papers.

The scientific sessions will be held at the Elks' Club—just across the street from the Hotel Danville and equally as convenient to the other hotels. Registration desk and information bureau will be on the first floor in this building. This Club will also house the commercial exhibits of which there are a goodly number and the scientific exhibits. This last feature is gaining in importance and this year we are to have the best scientific exhibit yet shown at one of our meetings. A dozen reservations had been made as we go to press. Another interesting feature will be a moving picture demonstration of some medical subject.

The Woman's Auxiliary has become quite a factor in our meetings. The ladies have arranged a most attractive program—one which will interest and entertain the wives and daughters of the visiting doctors, so bring the ladies with you. They will meet in the Y. M. C. A., just next door to Hotel Danville. In addition to the entertainments for ladies only, there will be a large supper and dance on Wednesday evening for members and visitors. The preliminary program for the Woman's Auxiliary appears under that department in this issue.

The Virginia Pediatric Society is arranging to have a luncheon meeting on one day during the State Society meeting.

While our attendance of members coming by railroad is not such as to secure for us reduced rates as some of the larger associations have, certainly one of the roads entering Danville has

had on special round trip tickets for limited time and distance. Ask about them and see if you are a "lucky holder."

Remember we get out of these meetings what we put in them. " 'Nuf sed".

The American College of Surgeons

Will hold the eighteenth Clincal Congress in Boston, October 8-12. Headquarters will be at the Statler Hotel and meetings will be held in the ballroom of the Copley-Plaza Hotel and Symphony Hall. The Hospital Standardization Conference will be held in morning and afternoon sessions in the ballroom of the Copley-Plaza Hotel Monday, Tuesday, Wednesday, and Thursday. An innovation this year will be the commencement of the clinics in the Boston hospitals on Monday afternoon, continuing through the mornings and afternoons of the following four days. Monday evening's program will include an address of welcome by the local Chairman, the address of the retiring President, Dr. George David Stewart, New York, the inaugural address of the new President, Dr. Franklin H. Martin, Chicago, and the John B. Murphy oration on surgery by Professor Vittorio Putti, of Bologna, Italy. Tuesday, Wednesday and Thursday evenings' sessions will be held in the ballroom of the Copley-Plaza Hotel. At the Wednesday evening meeting the visiting surgeons will be the guests of the Boston Surgical Society at a special meeting when the Bigelow medal is to be awarded. On Friday evening the Annual Convocation of the College will be held in Symphony Hall when the 1928 class of candidates for Fellowship in the College will be received. The fellowship address on this evening will be delivered by Dr. William J. Mayo. The annual meeting of the Governors and Fellows will be held Friday afternnon and will be followed by a symposium on Traumatic Surgery to be participated in by leaders in industry, labor, indemnity organizations and the medical profession. Ether Day will be celebrated in the Dome Room of the Massachusetts General Hospital on Friday when a bronze bust of William T. A. Morton will be presented to the hospital. It was in this building that ether was first administered for the production of surgical anaesthesia on October 16, 1846. Several newly completed medical motion pictures produced under the supervision of the American College of Surgeons and approved by it will be shown during the Congress.

Reduced fares on the railways of the United States and Canada have been authorized to those holding a convention certificate so that the total fare for the round trip will be one and one-half the ordinary first-class one-way fare. Other outstanding features will be the exhibits. In addition to the commercial exhibits the departments of the College will present scientific exhibits. A number of distinguished foreign guests of international reputation have signified their intention of attending. The Chairman of the Boston Committee on Arrangements is Dr. Frederic J. Cotton.

Dr. William C. Moomaw.

For several years a resident of Petersburg, Va., has located at Port Chester, N. Y., where he will continue the practice of his specialty—diseases of the eye, ear, nose and throat. Dr. Moomaw graduated in medicine from the University of Virginia, in 1903, since which time he has done special work in New York and Paris.

Capt. J. B. Mears, M. C., U. S. N.,

For a number of years a member of the Medical Society of Virginia, has again been transferred and is now at the U. S. Naval Training Station, San Diego, Calif.

Dr. Seth Gayle, Jr.,

Of the class of '27, Medical College of Virginia, recently completed his internship at Fitzsimmons General Hospital, Denver, Col., and has been appointed a first lieutenant in the Medical Corps of the U. S. Army.

Lt. Vincent Hernandez, M. C., U. S. N.,

Who was for sometime stationed in Virginia waters, has recently been transferred to the United State Naval Hospital, Boston, Mass.

Dr. Thomas M. Winn,

Of the class of '22, Medical College of Virginia, after a short time spent at Richwood, W. Va., has returned to Virginia and is now located at Covington, where he is limiting his practice to diseases of the eye, ear, nose and throat.

Health Associations to Meet.

Eleven sections will comprise the fifty-seventh annual convention of the American Public Health Association, which will be held jointly with the meetings of the American Child Health Association and the American Social Hygiene Association, October 15th to 19th, inclusive, at the Stevens Hotel, Chicago. Sections will be divided into the following main groups: Epidemiology, Public Health Education, Cancer, Vital Statistics, Industrial Hygiene, Public Health Engineering, Child

Hygiene, Laboratory, Health Officers, Food Drugs and Nutrition, and Public Health Nursing.

The discussions in each section will be led by an authority in that field. Dr. Edward S. Godfrey, Jr., Director of the Bureau of Communicable Diseases of the State of New York, will direct the section on Epidemiology—one of the most important divisions of the meeting. Dr. Godfrey will be assisted by Dr. Alton Pope, of Chicago, who will present a paper on "Fatality in Meningitis."

Convention discussions will be followed by laboratory trips, or inspection tours. Eighteen scheduled trips have been planned, and sixty-three optional ones are on the program, so that these tours will offer a wide range of interest and be of value to workers in every phase of health.

Over three thousand delegates and visitors, including physicians from England, Germany, Sweden, Mexico, Canada and the Canal Zone will be in Chicago to attend the meeting, which will open Monday evening, October 15th, with a general session at which Dr. Herman N. Bundesen president of the American Public Health Association, will deliver the opening address. A second general session will be held on Wednesday when Dr. Frank G. Boudreau will be present from the Health Section of the League of Nations at Geneva, Switzerland, to speak on "International Health."

Maryland Plans Relief for Crippled Children.

Several Maryland counties have organized clinics for the examination of crippled children during the summer, and an effort is being made to give them the benefit of skilled medical and surgical care either in local or in Baltimore Hospitals. The Maryland League for Crippled Children has estimated that Maryland has 4,500 crippled boys and girls under twenty-one, and that 2,000 of them live outside the city of Baltimore. A study made in Baltimore indicated that half the crippled children became disabled through infantile paralysis, and 16 per cent through tuberculosis; only about 6 per cent had been crippled from birth, and relief of some sort was possible for all but about 2 per cent.

Honor Company at Encampment.

The 110th Hospital Company, Virginia National Guard, of which Dr. John A. Hawkins, of Danville, is commanding officer, was the Honor Company of the 104th Medical Regiment at its annual encampment at Carlisle Barracks, Pa., from July 27th to August 10th. They took first place in every phase of military activity and also won the Regimental Athletic Trophy.

Dr. R. T. Akers Heads School Trustees.

Under the new school law, Dr. R. T. Akers, of Alum Ridge, Va., was re-appointed on the board of school trustees for Floyd County, Va., and was elected its president for the coming year.

Vacations of a Few Virginia Doctors.

Dr. L. S. Early, of Petersburg, and his niece have been cruising on the Great Lakes.

Dr. and Mrs. Carrington Williams and sons, of Richmond, have been visiting at Plattsburg, N. Y.

Dr. and Mrs. C. H. Iden and three young children, of Berryville, are home again after a vacation spent at Buckroe Beach, Va.

Dr. and Mrs. Paul W. Howle and daughter returned to their home in Richmond, early this month, after spending some time at Mountain Lake, Va.

Dr. W. C. Ford and two sons, of Woodstock, spent their vacation last month on a motor trip through Michigan and Illinois and other Central States.

Dr. F. W. Lewis, Richmond, spent his vacation this year, at his former home at Morattico, Va.

Dr. and Mrs. Hugh McGuire, Alexandria, have been motoring through France with friends.

Dr. M. O. Burke and family have returned to their home in Richmond after a motor trip to Hot Springs, Va., and through the western part of the State.

Dr. and Mrs. Mark R. Faville, Roanoke, returned home the latter part of August, after a visit to friends in Gloucester County, Va.

Dr. Emily Gardner, of the State Board of Health, Richmond, recently visited her home in Franklin, Va.

Dr. and Mrs. H. W. Porter and family, of Louisa, took a cottage at Virginia Beach, for two weeks in August.

Dr. and Mrs. Murat Willis, Richmond, left the middle of August for a trip abroad. They will be back early in October.

Dr. J. Minor Holloway has returned to his home in Fredericksburg, after a visit to the Mayo Clinic in Rochester, Minn.

Dr. and Mrs. Stuart McGuire, Richmond, spent their vacation motoring with friends through the White Mountains and Canada.

Dr. L. H. Hoover, Clarksville, visited Virginia Beach, last month.

Dr. and Mrs. Ben Gray, Richmond, have been spending some time at Fisher's Island, N. Y.

Dr. Susan W. Field, physician to the State Teachers' College at Farmville, is spending a vacation with relatives in Massachusetts.

Dr. and Mrs. Joseph Bear have returned to their home in Richmond, after a motor trip to Virginia Beach, Washington, Baltimore and Annapolis.

Dr. and Mrs. Francis W. Upshur have returned to Richmond, after a motor trip to Canada.

Dr. M. H. Watson, who is taking post-graduate work in New York City, visited his family in Chatham, Va., in August.

Dr. and Mrs. Arthur Brinkley and Dr. and Mrs. Ben Rosebro, Richmond, spent their vacation at Natural Bridge, Va.

Dr. and Mrs. Nash P. Snead, Cartersville, Va., were recent visitors in Norfolk, Va.

Dr. and Mrs. William H. Parker returned to their home in Richmond late in August after a stay at Camp Virginia, Goshen, Va.

Dr. and Mrs. W. T. McLemore, Courtland, recently motored to Philadelphia where they visited friends.

Dr. and Mrs. Frank Lord, Richmond, are home again after a visit to Hot Springs, Va.

Dr. and Mrs. E. F. Reese, Courtland, spent their vacation on a motor trip through the Valley of Virginia.

Dr. and Mrs. Karl S. Blackwell, and children, of Richmond, have been visiting relatives at Warrenton, Va.

Dr. and Mrs. W. C. Powell, Petersburg, spent the latter part of August at Mountain Lake, Va. This month they expect to attend the N. & W. Railway Surgeons' Association in Cleveland, Ohio.

Texas Better Health Special.

A special health-exhibit train, furnished and equipped by the Missouri Pacific Railroad, was recently operated for a month in Texas. The train consisted of two exhibit and two lecture cars and cars to accommodate the staff of twelve to fifteen physicians, sanitary engineers and technicians. The Texas health authorities, local physicians, and the U. S. Public Health Service and other Federal agencies furnished exhibit material and personnel, to conduct lectures and demonstrations. One exhibit car displayed a model of a complete dairy farm and a miniature pasteurization plant in operation. The train traveled more than 2,500 miles during the month's tour, stopping at 115 towns and cities. It was visited by 70,000 people.

The Inter-State Post-Graduate Medical Association of North America

Meets in Atlanta, Ga., October 12-19, for the first time below the Mason-Dixon line. Dr. George W. Crile, Cleveland, chairman of the program committee, has been ably assisted in putting out a splendid program, on which there are something over a hundred national and international teachers of medicine and surgery. On Friday and Saturday, October the 12th and 13th, local physicians and surgeons of Atlanta will have two days of clinics at Wesley Memorial Church. Sunday, the 14th, will be given to rest, worship and sight-seeing. Promptly at 7 o'clock, Monday morning, the 15th, the Inter-State Assembly opens and continues throughout Friday night, the 19th of October. At noon on the 20th, the local doctors will give an old Southern barbecue and in the afternoon there will be a football game between Georgia Tech and Notre Dame at Tech Stadium in Atlanta.

Dr. Lewellys F. Barker, Baltimore, is president, and Dr. John B. Deaver, Philadelphia, president-elect of the Association. This is an intensive post-graduate course open to all doctors who are members in good standing in their county or State organizations, the only charge being a registration fee of five dollars.

For program or other information, write Dr. Marion T. Benson, 503 Medical Arts Building, Atlanta, Ga., general chairman of the Atlanta committees.

Dr. Arthur D. Knott,

Formerly in charge of the health unit on the Eastern Shore of Virginia, and for the past year of Richmond, Va., has moved to Parkersburg, West Virginia, where he is health commissioner for Wood County and the City of Parkersburg.

Dr. Louis Holmes Ginn,

Of the class of '27, Medical College of Virginia, after a year's internship at Letterman General Hospital, San Francisco, has been commissioned a first lieutenant in the medical corps of the U. S. Army.

Nurses' Home Opened for Johnston-Willis Hospital.

Early in August, the new Nurses' Home of the Johnston-Willis Hospital, Richmond, was opened for inspection, and the following day

the nurses were established in their new quarters. This is a three story brick building, just to the rear of the hospital, with a capacity for housing approximately sixty nurses. In addition to nurses' quarters, there are classrooms for the training school, laboratories, rest and reception rooms.

Philadelphia Fights Diphtheria.

Display by the moving-picture theaters of a proclamation by the mayor of Philadelphia urging parents to have their children immunized against diphtheria was part of the campaign against this disease which was undertaken by the health agencies and other organizations of Philadelphia. The department of public health sponsored the campaign, and members of the staff did the inoculating, using seventy public and eight parochial schools as centers for the work. Public-utility and life-insurance companies aided in the work of distributing posters and circulars explaining the purpose of the drive.

Studies of Vision in School Children.

The United States Public Health Service has recently announced the results of studies conducted of vision of school children. Nearly 2,000 children were carefully examined by a physician specially trained in defects and diseases of the eye. These children were not a selected group and, therefore, the results may well be considered as representing conditions in the general school population of the country.

The number of children in the group studied who actually needed glasses for school work was 45 per cent of those examined. The Surgeon General emphasizes the importance of making visual tests of school children at least twice a year, because near-sightedness may progress rapidly within a year. The near-sighted eye may practically always be discovered by the use of the simple Snellen chart. Far-sightedness is not always discovered with this test.

These studies show that while 60 per cent of the children may read normally on the vision test chart, 32 per cent of these are definitely far-sighted and are constantly straining the eyes in near work. This was shown by using "drops" in the eye which temporarily removed the power of optical adjustment. The fact that the eyes of children should always be examined by a physician who is an eye specialist and is competent to make a thorough examination, is also pointed out. If a thorough examination had been made of the vision and proper steps taken for the correction of defects instead of waiting for symptoms to develop, it is probable that many persons who are wearing glasses today would not have to do so.

Married.

Dr. Adrian Lambeth Carson, Jr., Thorpe, W. Va., of the class of '25, Medical College of Virginia, and Miss Martha Warner, Franklin, W. Va., August 22.

Dr. Frank G. Scott, Jr., Orange, Va., and Mrs. Alice Shields Scott, Gordonsville, Va., August 22.

Dr. Francis Norman Bowles, Durham, N. C., of the class of '24, Medical College of Virginia, and Miss Rebekah Tresca, Palmetto, Fla., July 30.

Dr. John Russell Gill, of the class of '27, University of Virginia, Department of Medicine, and Miss Helen Dunbar Dew, Richmond, Va., early in August. They are at home at Jackson, La., where Dr. Gill is a member of the staff of the East Louisiana State Hospital.

Dr. William Carl Kappes, Huntington, W. Va., of the class of '24, Medical College of Virginia, and Miss Frances Kinney, Paris, Ky., in June.

The Southern Medical Association

Is to hold its twenty-second annual meeting in Asheville, N. C., November the 11th to 15th, inclusive. Dr. William R. Bathurst, Little Rock, Ark., is president, and Mr. C. P. Loranz, Birmingham, Ala., secretary-manager. Clinics, a good scientific program, golf, trap shooting and other pleasures will furnish a variety of entertainment for those attending. Asheville is ideally located for those going by rail and motor and a large attendance is expected. This Association has a membership of nearly nine thousand, representing sixteen Southern states and the District of Columbia. Membership in the S. M. A. is dependent upon membership in one's State organization. Now is a good time to join and attend the Asheville meeting.

Dr. James S. Chalmers,

Recently of Appalachia, Va., has located at Ada, Oklahoma.

Dr. Susan A. Price,

After substituting for Dr. Field as resident physician at State Teachers' College, Farmville, Va., has returned to her home in Williamsburg, Va. It is a matter of interest that Dr. Price's home in Williamsburg is one of those recently bought in the "Restoration of

Williamsburg" movement, but she has a life tenure in it.

Causes of Illness at Different Ages.

The interesting statement has recently been made by the U. S. Public Health Service that the age period in which human beings are most free from sickness of any kind is between twenty and twenty-five years. In infancy and early childhood they are most subject to illness, but in late childhood and adolescence the "curve of ill-health" drops rapidly to a minimum; thereafter it gradually rises until another maximum is reached in old age. Also the human female is more often sick than the male in spite of her longer average duration of life.

A city of about 8,000 was selected in which to make the survey and the causes of sickness at different ages were carefully recorded, the practicing physicians of the town co-operating to the fullest extent in making these records medically correct. One of the most striking results was that respiratory illnesses, particularly the so-called "common cold", accounted for over half of the illnesses at every age, but that each principal period of life is characterized by certain causes of illness. The only major causes which result in a higher rate of sickness in young adult ages than in any other age are puerperal conditions of females and certain specific causes of illness such as venereal diseases, typhoid fever, and pulmonary tuberculosis.

It was found that the higher female sickness rate did not hold true for children under ten years of age. Boy babies and small boys were apparently more subject to infectious diseases and to diseases of the eyes and ears, skin, to colds and other respiratory conditions, and to digestive troubles, than were girls of the same age. But, as soon as the adolescent period of life began, the sickness rate of girls became higher than that of the boys and the female rate for practically all diseases was actually higher than that of the males throughout adult life. One exception noted was that the frequency of accidents was greater among males than among females at every age of life.

The Southwestern Virginia Medical Society

Has arranged an excellent program for its meeting at Wytheville, September 27 and 28, under the presidency of Dr. J. L. Early, of Radford. Dr. E. G. Gill, Roanoke, is secretary. Dr. Robert H. Ivy, of Philadelphia, and Dr. William T. Graham, of Richmond will present papers as invited guests. These, with the symposium on Head Injuries and voluntary papers by members, should make an interesting program.

Major Freeland Honored.

Major Herbert L. Freeland, M. C., U. S. Army, who has been stationed at Richmond, Va., for several years, in charge of the organized reserves in this section, has been transferred to Fort Sam Houston, Texas. He left Richmond the first of this month for an extended auto trip with his family through the Middle West before reporting for duty at his new station early in October.

Several days before his departure from Richmond, a number of reserve officers in this section tendered Major Freeland a farewell dinner at the University Club, Richmond, in recognition of his service here.

Dr. P. G. Hamlin

Announces his removal from Williamsburg, Va., to 301 Medical Arts Building, Lynchburg, Va., where he is associated with Dr. Hunter B. Spencer in the practice of roentgenology.

Dr. D. Lane Elder

Has just been re-elected by the Hopewell City Council as mayor of that city for another term.

Visit Richmond.

Dr. and Mrs. Perry Wiseman and daughter, Alice Margaret, of Avondale, N. C., and Dr. and Mrs. Waylon Blue, of Jackson Springs, N. C., visited friends in Richmond the middle of August. Both Drs. Wiseman and Blue are members of the class of '25, Medical College of Virginia. Mrs. Wiseman was formerly Miss Grace Furrh and superintendent of Hygeia Hospital, this city.

Dr. E. L. McGill,

After a furlough of several months on account of his health, has resumed his duties as coroner of Petersburg, Va.

The Elizabeth Buxton Hospital,

Newport News, Va., has issued its Annual Report and Descriptive Booklet for 1927. This is profusely illustrated and gives an excellent description of the hospital which was founded in 1906. During the year, the total number of patients admitted to the hospital was 1,892, with 1,653 operations, and the work done was of a high class.

Dr. J. H. Mitchell

Was recently elected one of the councilmen of Dillwyn, Va., his term of office commencing September 1.

North Carolina's Drive to Increase School Attendance.

A division of school attendance has been created in the State Board of Charities and Public Welfare of North Carolina to conduct intensive work to increase daily school attendance throughout the State. The work in each county will be under the county superintendent of public welfare and the truant officers, the school superintendents and rural supervisors acting in an advisory capacity. Local committees will be appointed to co-operate with the county officers in arousing the interest of the public and especially of the parents in school attendance, to help the teachers in getting at the true reasons for absences, and to bring about adjustments in the home when needed to permit the child's return to school.

Officers in American Legion.

Dr. Clyde F. Ross was elected first vice-commander of Richmond Post No. L, American Legion, at its annual meeting last month. Dr. J. Fulmer Bright was elected a member of the new executive committee.

New Hospital Opened.

The Northampton-Accomac Memorial Hospital at Nassawadox, Va., was opened on August the 11th and is the first hospital to be opened on the Eastern Shore of Virginia. It has been erected at a cost of about $150,000 and has accommodations for sixty patients. According to an agreement which has been made, for the next five years the new hospital will be under the management of the Johnston-Willis Hospital, Richmond, and Drs. Murat Willis and Frank Johns will visit the hospital from time to time. Dr. Donald Daniel, for the past two years resident surgeon for the Hospital Division of the Medical College of Virgina, Richmond, will occupy a similar position at the Nassawadox hospital, and will be assisted by Drs. William C. Henderson and John Hamilton, recently of Johnston Willis Hospital.

McGuire Memorial in Winchester.

On the first of August a bust of the late Dr. Hunter Holmes McGuire, of Richmond, given by his son Dr. Stuart McGuire, was placed in the gallery of art and history of the Handley High School, at Winchester, Va. The presentation took place in the house in which Dr. McGuire was born over ninety years ago and which is now owned and occupied by his nephew and namesake, Dr. H. H. McGuire, of Winchester. The bust is one of three made by the late Dr. John W. Brodnax, of Richmond, the others being in the Confederate Battle Abbey and St. Luke's Hospital, Richmond.

Appointments in Petersburg.

Dr. William A. Reese has been appointed city physician of Petersburg, Va., to succeed Dr. George H. Reese, who recently resigned to give his entire time to private work.

Dr. E. W. Young was also appointed a member of the staff at the Petersburg health center, succeeding Dr. William I. Prichard, resigned.

Degree of "Master of Midwifery" for Physicians in Great Britain.

Medical practitioners in Great Britain who have held for six months a resident appointment in a recognized obstetric hospital, have attended a recognized prenatal clinic and a recognized infant-welfare center for not less than three months each, and have passed examinations in obstetrics, infant welfare, and diseases of infancy are now offered a new diploma granting the degree of master of midwifery by the Society of Apothecaries of Great Britain.

Dr. Lee S. Liggan,

Recently located near Portsmouth, Va., has moved to 705 North Twenty-fourth Street, Richmond, Va.

Dr. Fitzhugh L. Banks,

Who has made his home for sometime at Maben, W. Va., is now connected with the Hinton Hospital, at Hinton, W. Va.

President of Johns Hopkins Medical Society.

Dr. William H. Wilmer, of Baltimore, has been elected president of the Johns Hopkins Medical Society for the coming year.

Far Reaching Work.

Dr. William F. Drewry, a former president of the Medical Society of Virginia, has now been city manager of Petersburg, Va., for five years. In a report recently given the city council of that place, outlining the work which has been accomplished with the help of the city officials, during his administration, Dr. Drewry also made a number of recommendations to answer future needs of that city, which when accomplished, should make it one of the most up-to-date of Virginia's cities. Dr. Drewry is to be congratulated on the work he is doing.

Dr. George C. Snead,

Who has been practicing for sometime at Wilder, Va., has now located at Clinchco, Va.

"Graduate Fortnight".

A great deal of interest has been aroused in the "Graduate Fortnight" of the New York Academy of Medicine, on the problem of aging and of old age, which is scheduled for October the 1st to 14th, with two sessions daily at the Academy, and clinical demonstrations and lectures at thirty teaching hospitals. All meetings and lectures held at the Academy are open to the profession generally and to medical students.

For information, write the Executive Secretary of the Bureau of Clinical Information, New York Academy of Medicine. Fifth Avenue and One Hundred and Third Street. New York City.

Dr. A. C. Van Reenen,

Of the class of '24, Medical College of Virginia, announces his removal to Davy, West Virginia, where he will be engaged in practice.

Mental Hygiene Leaflets.

The National Committee for Mental Hygiene, 370 Seventh Avenue, New York, N. Y., has issued several pamphlets reprinted from "Mental Hygiene" and the "Mental Hygiene Bulletin", a complete list of the publications of the National Committee for Mental Hygiene. and "Suggestions for Reading in Mental Hygiene". This material should be of value to the general practitioner who is frequently puzzled by the mental attitudes and behavior difficulties of his patients.

Dr. James McLean Rogers,

Who has for several years been in charge of the Alexander Hospital at Soonchun, Korea, will leave there early in October for an eight months' furlough in this country. He will be with his father at his home at Amelia Courthouse, Virginia.

Civil Service Examinations.

The following open competitive examinations have been anounced by the U. S. Civil Service Commission, Washington, D. C., which will give full information about same:

For associate statistician (public health) and assistant statistician (public health), applications to be on file with the Commission not later than October 19;

For social worker (psychiatric) and junior social worker (psychiatric), applications to be on file with the Commission not later than December 29, 1928.

Drs. Blanton Move.

Drs. C. A., H. W. and W. B. Blanton, Richmond, announce removal of their offices from 300 West Grace Street to 828 West Franklin Street, this city.

"Sunlight Beneficial to Health but Extensive Sunburn Should be Avoided",

A statement made in a recent bulletin issued by the U. S. Public Health Service, is one familiar to all physicians. However, all laymen are not familiar with this fact and, in prescribing "sun baths" for patients, young or old, this bulletin suggests that the following facts be kept in mind:

Exposure to the sun must be gradual or else the person unaccustomed to the sun may receive a sunburn.

At first give the direct sunlight for about ten minutes, increasing the exposure by three to five minutes daily to one hour in the morning and one hour in the afternoon.

The exposure should be in some spot sheltered from the wind. Sun baths may be given on enclosed porches or in the house, provided the sun is unobstructed by glass, though special glass has been devised which will permit passage of the majority of the beneficial rays of the sun. Such glass may be used if desired.

Prolonged or sudden exposure to sunlight should be avoided, as injurious or even dangerous sunburn may result if the sunburn is extensive. In case of sunburn, the following has been found useful:

Make a lotion as follows: Take one-half a pint of hot water and stir into it a level tablespoonful of boric-acid powder; then add twenty drops of carbolic acid, and shake well. The solution should be dabbed on the inflamed skin with a small piece of cotton or sprayed on with an atomizer. It should not be rubbed into the skin. It can be applied every half hour, if necessary. If no medicine is available. cold compresses will give relief to badly burned areas.

Dr. Oliver Lee Jones,

Of the class of '27, Medical College of Virginia, who recently completed an internship at Lewis Gale Hospital. Roanoke, Va., has located in Hopewell, Va., for the practice of his profession.

Dr. W. J. Innes,

Who since August, 1918, has been located at St. Charles, Va., is now at Pennington Gap,

Va., where he is engaged in the practice of his profession.

Dr. Joseph M. Burke,

Chief surgeon of the Seaboard Air Line Railway, Norfolk, is under treatment at Johns Hopkins Hospital, Baltimore.

Dr. James C. Repass,

For some time located at Cedar Bluff, Va., has moved to Raven, Va.

Doctor Wanted.

To take over established practice in small town and thriving rural community. Excellent roads, high school and churches. Cash collections $5,000 to $8,000 annually. Wonderful opportunity. Reason for selling—want to move to city to specialize. Address "Doctor", care VIRGINIA MEDICAL MONTHLY. (Adv.)

Obituary Record

Dr. William David Woolwine,

Pearisburg, Va., died suddenly July the 27th, death being due to angina pectoris. Dr. Woolwine was born in Pearisburg, fifty-two years ago, and studied medicine at the University College of Medicine, Richmond, Va., from which he graduated in 1897. He had been a member of the Medical Society of Virginia since 1900. His health had not been good for the past ten years and he had recently spent sometime at Catawba Sanatorium. Besides his uncle Mr. J. H. Woodrum, in whose family he made his home, he is survived by one sister and three brothers, one of them being Dr. A. B. Woolwine, of Ceres, Va.

Dr. Alexander Russell Gray,

Nokesville, Va., died August the 30th, aged fifty-nine years. The interment was at Palmyra, Va., where he had practiced for a number of years. Dr. Gray was graduated in medicine at the Medical College of Virginia in 1905 and had been a member of the Medical Society of Virginia for some years. His wife and several children survive him.

Resolutions on Death of Dr. Beckwith.

A called Faculty Meeting of the Petersburg Medical Faculty and the Staff of the Petersburg Hospital was held at the Health Center July 28, 1928, to take action on the death of our beloved colleague, Julian Ruffin Beckwith. The following preamble and resolutions were adopted:

WHEREAS, In the death of Julian Ruffin Beckwith, the Medical Faculty of Petersburg and the Staff of the Petersburg Hospital have lost one of our most valued and beloved physicians, whose life was given unfailingly and untiringly to the practice of his profession.

THEREFORE BE IT RESOLVED, That we extend to his family our sincere and heartfelt sympathy; and furthermore

BE IT RESOLVED, That a page in the minutes of each organization be dedicated to his memory;

That a copy of these resolutions be published in the *Progress-Index* and in the *Virginia Medical Monthly;*

That a copy be sent to his bereaved family, and

That the members of these organizations attend the funeral in a body.

Signed:
MASON ROMAINE, M. D., *Chr.*,
W. F. DREWRY, M. D.
W. A. REESE, M. D.

Dr. G. Shirley Carter,

Warrenton, Va., died at the Emergency Hospital, Washington, D. C., August 13th, after an illness of several months. He was seventy-four years of age and was graduated in medicine from the University of Maryland, Baltimore, in 1882 and had practiced in Warrenton since 1885. He is survived by his wife and two children.

Dr. Charles A. L. Reed,

Cincinnati, Ohio, emeritus professor of gynecology at the University of Cincinnati. College of Medicine, died at his summer home at Gloucester, Mass., August 29th, at the age of seventy-two years. He was a well known surgeon and author.

Dr. William Early Coltrane,

Dunn, N. C., member of the class of 1912, Medical College of Virginia, Richmond, died June the 2nd of carcinoma, aged forty years. He was a member of the Medical Society of the State of North Carolina.

Dr. William J. Summers,

Boonton, N. J., who graduated in medicine from the former University College of Medicine, Richmond, Va., in 1908, died July the 7th, of chronic nephritis. He was forty-three years of age, and a member of the Medical Society of New Jersey.

Mrs. Fred M. Hodges,

Wife of Dr. Fred M. Hodges of Richmond, Va., died August 28th after an illness extending over several months. Besides her husband, she is survived by her mother, Mrs. Annie Mueller, formerly of Oregon.

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20 CENTS A COPY
$2.00 A YEAR

ACTINOMYCOSIS OF THE LIVER.*

By
W. S. FULTON, M. D., F. A. C. S.,
and
W. M. SHEPPE, M. D.,
Wheeling W. Va.

Since the specific infectious agent of actinomycosis was first recogized by Bollinger[1] in 1877, many cases have been reported involving various parts of the body. A close examination of the literature reveals the fact that invasion of the liver alone by this infection is remarkably rare. It is for this reason that we present the description of a single case together with certain observations on treatment.

Case Report

Miss G. S., white female, age 34. The present illness began in the latter part of 1925. Patient noticed that the taking of food brought on attacks of pain and burning in the epigastrium. There was a severe attack of acute epigastric pain at this time requiring morphine for relief. Following this she was deeply jaundiced. Eructations and gas accumulation were marked. The patient had a good appetite but was afraid to eat. She gradually lost weight during this period. Symptoms became worse and appendectomy was performed by an outside surgeon in December, 1926. A pathological report of the appendix was not available. Nothing unusual was noted and the wound healed without sinus formation. About the time of the onset of symptoms a tooth was extracted. The gums became badly swollen and very sore for three weeks. Other teeth have been extracted from time to time without bad results.

The patient was admitted to the Wheeling Clinic November 28, 1927, complaining of "indigestion and loss of weight". Her weight which had been 197 lbs. in 1925 had declined to 132 lbs. The patient attributed this loss of weight to the fact that she was afraid to eat. There was no relief from the previous appendectomy and the symptoms described above had become progressively worse.

Physical Examination (only positive findings noted):—The patient is a middle-aged white woman who looks sick.

The *skin* is flabby.

Teeth: Two molars broken off even with gums. Two cavities are noted in gums, both containing pus.

Abdomen: A scar from a right rectus incision is noted. There is considerable muscular rigidity in the epigastrium. An indefinite mass could be palpated in the same area. Liver dullness extended to the fifth rib in the nipple line. The free edge of the liver could be felt below the costal margin. The spleen was not enlarged. All other examinations, including rectal and vaginal, were negative.

Laboratory Reports: Urine negative. Phenolphthalein renal function—47 per cent.

Blood: Sugar 0.102 per cent.
Urea nitrogen 12.55 mgs. /100 c.c.
R. B. C. 3,960,000; achromia and anisocytosis marked.
W. B. C. 13,800; Pmns. 82 per cent.
Icterus index—9 units.
Coagulation time—four minutes.
Complement fixation negative.
Van den Bergh negative.

Bacteriological: Cultures from sputum and feces negative.

Preparations from infected tooth cavities negative for ray fungi.

X-Ray Examination: Root fragments of teeth present; no apical abscesses. Chest: Right diaphragm high; lungs otherwise negative.

A provisional diagnosis of carcinoma of the liver was made and exploratory laparotomy performed December 1, 1927.

Operative Findings: The liver was enlarged and very firm, particularly the middle lobe. A tumor the size of a large orange occupied the middle lobe. This tumor was solid in consistency and grayish yellow in color. The

*From the Surgical and Medical Divisions of the Wheeling Clinic.
Read before the Tri-State Session of the American College of Surgeons, in Roanoke, Virginia, January 18, 1928.

gastro-hepatic ligament and pyloric end of the stomach were densely adhered to the tumor mass. All other abdominal and pelvic viscera were examined and found to be normal. A portion of the liver and tumor mass was removed for microscopic study.

Pathological Report: Gross: The material is a rectangular piece of liver tissue 1½x4 cm. The included capsule is smooth and glistening. The parenchyma is studded with numerous small yellowish gray nodules, pinhead in size and sharply demarcated from the surrounding liver tissue.

Microscopic: The major portion of the section is composed of very dense fibrous tissue in which a few Pmns. are scattered. In a number of different areas are dense accumulations of leucocytes. The outline of these areas is very irregular. Many endothelial cells containing lipoid globules and debris are noted. In the center of the groups of Pmns. are deeply staining (hematoxylon) clumps, the borders of which are composed of more or less parallel clubs and filaments taking an eosin stain. Size of clubs 1x9 microns. Pathological Diagnosis: Actinomycosis of the liver.

Post-Operative Course: The temperature fluctuated from 99 to 101°. Convalescence was uneventful. The patient was discharged on the 18th day with the incision practically healed. Weight 123 lbs. Appetite excellent.

Further Treatment: Potassium iodide in saturated solution was begun minims 15 t.i.d., increasing three minims each day. An iodide rash developed but was disregarded due to the urgency of the situation. Deep X-ray therapy was begun December 27th.

Historical

It is difficult to estimate the exact incidence of actinomycotic infections in man. Many cases are not reported. Many cases are not diagnosed. In addition, the classification of this group of organisms has been so confused that cases are reported under different names, such as Nocardia, Streptothrix, etc. It is certain, however, that the disease is fairly frequently observed in man. It is equally certain that cases in which the liver alone is invaded are rare.

Collier and Adie[2] reported fifty cases from the University of Michigan. The liver was invaded only once in this series.

Sanford and Voelker[3] collected 670 cases reported in the entire United States. The liver was involved in seventeen instances. It was alone involved in only five cases, setting the incidence of so-called primary actinomycosis of the liver in the United States at less than .7 per cent.

M. Auvray[4] records thirty-one cases in the foreign literature, but the data was insufficient to determine how many of these were primary.

Pathogenesis

There is considerable difference in opinion as to whether the pathogenic ray fungus occurs in nature or not. Wright[5] is inclined to believe that the aerobic organism found on grains and grasses has no relation to the anaerobic organism which is infectious for man. He discounts the prevalent belief that the ray fungus reaches the gastro-intestinal tract by chewing straw, or grains, but feels rather that the trauma of the mucous membrane induced by such sharp objects allows the invasion of the already present organism. This idea is confirmed by the experimental work of Harbitz and Grondahl[6] in Norway. Mattson[7] is of the opinion that infection is directly from animal to man but offers little to support this statement. Experimental proof is difficult to ob-

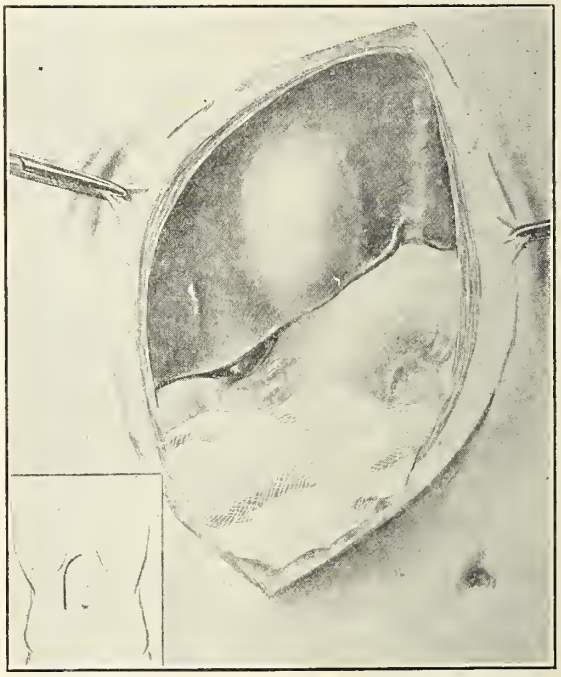

Fig. I.—Actinomycotic abscess of the liver encapsulated by fibrous tissue. Infiltration and induration of round ligament. Other nodules not visible through incision. Insert shows type of incision employed.

tain and the matter must remain for the present *sub judice.*

Whatever the natural habitat of the organism may be, it seems likely that carious and infected teeth frequently harbor the infection. Once present in the mouth, it may be either absorbed into the general circulation or swallowed and so invade the intestinal tract directly. It is difficult to believe that this rather large organism may enter the venous circulation, go through the right heart, leave no trace to mark its passage through the lung capillaries and reappear to be distributed by the arterial circulation as metastases to the liver.

On the other hand, gastro-intestinal symptoms practically always precede the involvement of the liver. This is evidenced by the great number of cases in which an appendectomy was performed without relief. In our own cases, the sequence of infected teeth and gums, the vague gastro-intestinal symptoms unrelieved by appendectomy, and the later development of liver abscesses seem to mark the track of the infection *via* the portal vein rather definitely. In other words, "primary actinomycosis of the liver" is probably a misnomer. While in many instances, as in the case cited, no other lesion can be found, yet the history invariably suggests that it must have once been present. A rather striking feature is the total absence of lymph gland involvement. The organism, if not extending by continuity, seems to travel entirely *via* the blood stream.

Descriptions of the gross appearance of the liver contain references to massive abscesses filled with grumous yellowish pus inter-communicating by numerous sinuses. The descriptive phrase frequently used is "a sponge filled with pus". In the particular liver under discussion, the larger abscesses appear to be rather localized by an enormous proliferation of fibrous tissue. The appearance is very suggestive of a gummatous liver or of a primary carcinoma of the liver. Collier[2] observed that, when the abscesses were evacuated surgically, bleeding was often very profuse from the walls. He believes that a diagnosis may be based on this point during operation. It will be noted in the sections that the peripheral clubs surrounding the interlacing masses of mycelia are very numerous and well developed. It is stated that these clubs develop only when the organism is in contact with blood serum or tissue juices. Harbitz[6] believes an increased number of clubs is indicative of low virulence on the part of the organism and high resistance on the part of the host. The correlation of the large number of clubs with the marked fibrous tissue reaction just described would indicate that this is true. Although Pmns. were present in great numbers, phagocytic activity seemed to be confined to the endothelial cells.

Differential Diagnosis

While the disease may be suspected, it is probably impossible to make a differential diagnosis of actinomycosis of the liver before operation. The liver is usually considerably enlarged and tender. Moderate jaundice may be present. Either constipation or diarrhea may manifest itself. Ascites is certainly very rare. An irregular temperature and rather marked loss of weight are constant symptoms. The leucocytes are only moderately increased. The complement fixation and agglutination tests are of no value in suspected cases.

Treatment

The therapeutic phases of this subject must of necessity be discussed from a purely empirical standpoint. Accurate data on the results of any form of treatment are lacking, as the cases are few and the clinical course difficult to analyze.

General: As in any other chronic or subacute infection, hygienic measures must not be overlooked. Good food, good air and an abundance of rest must be provided.

Chemo-Therapy: Potassium iodide in large doses is spoken of by all writers, even some of the earliest, on this subject. It was introduced by Thomassen[8] in 1885, and soon found great favor with the veterinarians. Investigations undertaken with a view to finding an explanation of its reputed specific action have so far been quite unsuccessful. The organism does not lend itself readily to the demonstration of bactericidal effects, but observations have been made by Harbitz and Grondahl[6] that actinomycosis was little affected *in vitro* by concentrations of potassium iodide up to 2 per cent. Jobling and Peterson[9] had the conception that the iodides lower the antitryptic power of the blood, thereby promoting the solution and absorption of necrotic tissue, laying bare to the action of the real germicidal agent the infecting organism which previously had been protected by the necrotic tissue. Opinion as to the favorable effect of the iodides is by no means unanimous. Colebrook[10] feels that

they are indicated in cases which present large unsoftened foci and that, when this dissolution is accomplished, the administration should be discontinued.

In spite of conflicting opinion it is probable that the iodides will continue to be administered for lack of a better remedy. It occurs to us that if it is the iodine content of the drug that is of value, it would probably be more efficacious to prescribe Lugol's solution.

Copper sulphate has been administered by mouth in small doses, but the results are no better than with the iodides. Arsenic in its varied forms, particularly arsphenamine, has been advocated. In a case such as ours in which the liver damage was probably extensive but not readily determined, we were afraid to administer this drug as we would be in cases of hepatic syphilis.

Kolmer[11-12] suggests that in any liver infection the dyes known to be excreted in the bile, such as sodium tetraiodophthalein, might be efficacious. He also thinks it possible that sodium and gold thiosulphate might be of value. There is no report of the clinical trial of either drug.

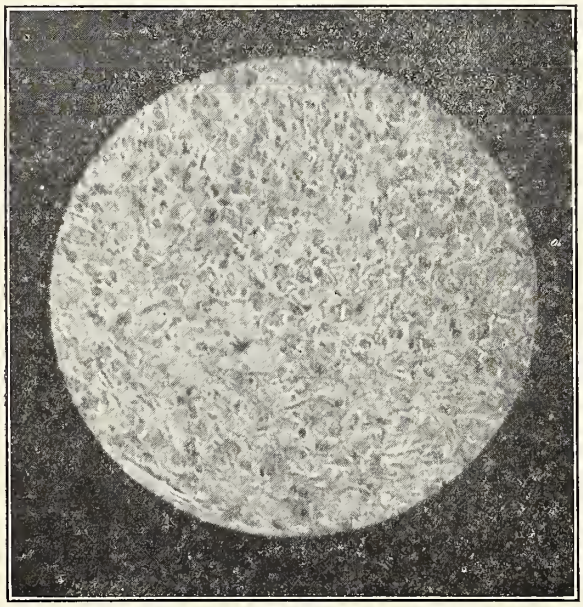

Fig. II.—Note infiltration of endotheloid cells and absence of liver cells. This is from the edge of the nodule and fibroblastic proliferation is noted.

Vaccine Therapy: Colebrook[10] and other British authors speak very favorably in regard to this mode of treatment. However, in all instances cited, they were dealing only with superficial infections which were rather localized. In no case did a general involvement respond. The vaccine is standardized in numbers of "fragments". The initial dose was two million mycelial fragments, gradually increasing to ten millions. An autogenous vaccine is believed to be most effective. The combination with surgical measures makes the method difficult to evaluate.

Radio-Therapy: Bevan, in this country, was the first to make use of the X-ray in the treatment of actinomycosis. This was done in 1904. Since that time the method has enjoyed wide favor, either alone or in combination with other measures, in the treatment of the superficial types of the infection. It is undoubtedly efficacious in many cases.

Brofeld[13] reports 151 cases of all types treated radiologically. This is the only report, apparently, which mentions the radiation of the liver for this disease. This author feels, however, that in any abdominal involvement the prognosis is 95 per cent poor. The atrophy, necrosis and hyperemia noted when the liver of animals is radiated, does not seem to occur in man if the dose is kept within therapeutic limits. The consistently favorable mention of the combined use of X-ray and iodides led us to employ deep therapy in the treatment of our case. We know, of course, that radiation cannot directly affect the organism at this depth. It has been shown that it requires seven times the skin erythema dose to affect the organism of actinomycosis even when directly applied to the culture. It is possible that there is, first, an irritation, which promotes the formation of fibrosis; secondly, that the humoral defenses of the body are increased; and, thirdly, that when the iodides are given, the iodine radicle is more readily separated and made available by the rays.

Our factors in treatment were as follows:

Upper abdomen—Field 20x20; body diam. 20 cm. Thirty-eight per cent depth dose in 10 cm.

Dose: 2/3 Sk. E. D. per field, divided in two treatments.

Two hundred K. V.—4 M. A.—0.75 cu.—1 Al.—50 gm. focus skin. Time, 30 min.

Middle part of back—Field 20x20; Same tech. cond. Dose 2/3 Sk. E. D. in two doses.

Surgery: In the superficial cases surgery no doubt represents the most valuable single method of attack. Brofeld[13] and others advise against the operative treatment in abdominal

cases, no matter what viscus is involved. In no series of abdominal cases has the mortality been affected.

In our own cases several factors prevented any attempt at radical surgery:

1. The large nodules were multiple.
2. There was evidence to convince us that pin-head size metastases were very numerous, and that removal of the large nodules would still leave the infection practically untouched.
3. The probability of establishing a permanent fistula leading into the liver.
4. The probability of profuse hemorrhage from the abscess walls.
5. The fact that all the lesions were well walled off by fibrous tissue.

It is quite possible that a single large abscess might be readily evacuated and the walls cauterized by chemical or thermal measures. It is evident that a decision as to operative interference in any individual case of abdominal involvement must be made at the time of operation.

Prognosis: Although fatalities do occur, it is a well known fact that many superficial cases

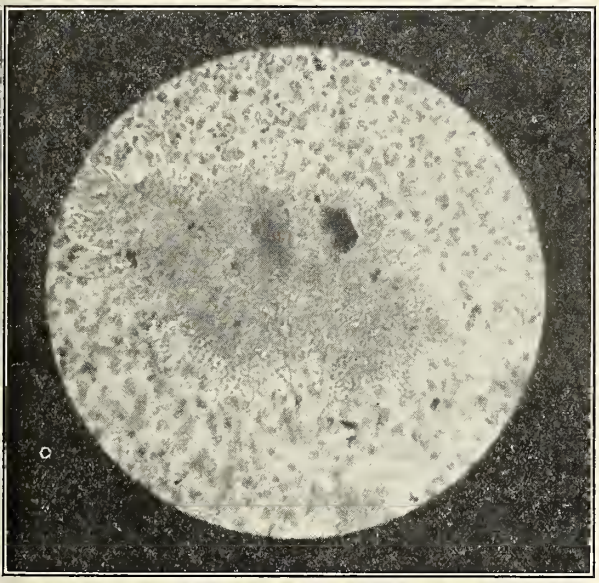

Fig. III.—Note abundant "club" formation. Magnification 200 diameters.

recover. This is especially true of the cervico-facial type. On the contrary, the prognosis in the thoracic group is 100 per cent unfavorable. The abdominal cases occupy a mid-position. Exact figures are not available, but it is probable that 10 to 15 per cent recover. In view of the dense encapsulation, the lack of involvement elsewhere, and the absence of secondary infection, we are inclined to believe that our case has at least an even chance to survive.

Summary

1. A case of actinomycosis involving the liver alone is reported.

2. The features of the case are involvement of a single viscus, dense encapsulation of lesions, and marked "club" formation on the part of the organisms.

3. The portal of entry was believed to have been from carious teeth to ileum and appendix, and from thence to the liver *via* the portal vein.

4. Treatment by means of chemo-therapy, surgery, vaccines, and radiation is discussed. The treatment in the reported case is confined to iodides and deep X-ray therapy.

5. The prognosis, although very poor in abdominal cases, is believed to be fairly good in the case reported, due to evidences of low virulence on the part of the organism and high resistance on the part of the host.

We wish to acknowledge with thanks the assistance of Dr. P. T. Southgate, of the O. V. G. Hospital, and Dr. Wm. Kalbfleisch, of the Wheeling Clinic, for valuable assistance in this study.

References.

1. Bollinger: *Deut. Ztschr. F. Tiermed.*, 1877, 3, page 334.
2. Collier & Adie: *Jour. Mich. State Med. Soc.*, Sept., 1924.
3. Sanford and Voelker: *Arch. of Surg.*, V. II, No. 6, Dec., 1925.
4. Auvray, M.: *Revue de Chirurgie*, XXVIII, July, 1903.
5 Nelson: System of Medicine, Vol. II, page 355.
6. Harbitz and Grondahl: *Amer. Jour. Med. Sc.*, Vol. CXLII, Sept., 1911.
7. Mattson: *Surg. Gyn. & Obs.*, Vol. XXXIV, page 482.
8. Thomassen: *L'Echo Ve't.*, 1885.
9. Jobling and Peterson: *Arch. Int. Med.*, 1915, Vol. XV, page 286.
10. Colebrook: *The Lancet*, Vol. I, 1921, page 893.
11. Kolmer: *Chemo-therapy*, Saunders, 1926.
12. Kolmer: Personal Communication.
13. Brofeld, Acta, Chr. Scand. Bd., 60, II, 1923.
14. A Text-Book of Pathology: Macallum, W. B. Saunders Co., 1918.
15. General Bacteriology: Jordan, Saunders, 1909.
16. Principles of Pathology: Adami & Nicholls, Vol. II.
17. Da Costa: Modern Surgery, Saunders, Seventh Ed.
18. Snoke, P. O.: *Amer. Jour. Med. Sc.*, Vol. 175, No. 1, Jan., 1928.

Wheeling Clinic.

DIAGNOSIS AND MANAGEMENT OF OCCIPITO-POSTERIOR CASES.*

By P. ST. L. MONCURE, M. D., Norfolk, Va.

In thin women, diagnosis can be easily made by palpation of the limbs through the abdominal wall. Even at the beginning of labor the shoulder can be felt far back from the median line, with a distinct hollow just above the pubis, and the forehead can be felt above the brim of the pelvis on the opposite side. Heart tones are heard deep in the flank, and are usually far off, unless there is a deflexion of the head, when they may be very loud.

Internal Examination: In the early stage, the head is felt high up; the small fontanelle is in the posterior part of the pelvic cavity, while the sagittal suture is in a line of an oblique diameter. The above mentioned signs, with long labor, weak and irregular pains, frequently early rupture of the bag of waters, the head staying up longer than in anterior cases and requiring very hard pains to bring it down, will pretty well convince us that we are dealing with a posterior case.

It is claimed that occipito-posterior cases occur in from 1 to 4 per cent of all labors, but, in my experience, it has occurred in about 8 per cent of cases; and if I were to count those that started posteriorly and are converted spontaneously after diagnosis has been made, the percentage will run up to over 12 per cent. The most common cause, Edgar says, is incomplete flexion of the head, whereby some other part of the head, as the forehead, rather than the occiput, first meets the resistance of the pelvic floor and is deflected anteriorly.

De Lee and some other authorities claim that in the majority of cases, at the beginning of labor, the head enters the pelvis in the transverse diameter, and, when labor starts with an O. D. P. or O. L. P., anterior rotation occurs and delivery terminates as an anterior case. This explains the trouble we frequently think we are in, when, after carefully and accurately diagnosing a posterior case, we go off for a while, give the woman a "hypo." of morphine, and as much time and rest as we can, and come back in two or three hours to find to our surprise and great relief—and certainly to the relief of the woman—that our case is being rapidly converted into an anterior case, and will be born naturally in a few minutes.

*Read before the Norfolk County Medical Society.

Dilatation of the cervix is slow on account of the frequent premature rupture of the bag of waters, and because the head does not fit into the pelvis and does not, therefore, press evenly on the cervix all around. The cervix now being more or less fully dilated, if there is spontaneous rotation, the small fontanelle will rotate with flexion to the front. The caput succedaneum, however, is often so large that the fontanelles cannot be made out; but, in this case, the fingers can be passed up and the ear felt, and the position accurately made out.

Course: When the head has entered the pelvis and turns posterirly, or enters obliquely posteriorly, *strong pains* will frequently convert it into an anterior case—the occiput sweeping forward 135°,—or it may remain back, or turn back in the hollow of the sacrum. In this event she may still be able to deliver herself, the head being extremely flexed, and a perineal tear almost invariably occurring. The occiput is then born first, the nape of the neck lying on the torn perineum. If the head becomes deflexed in its descent and the brow appears at the vulva, the perineum is still more stretched. The occiput next appears against the perineum, the face coming from behind the pubes, and the head is born by partial extension. The perineum is torn invariably in this instance, the tear extending still further sometimes. In the first case, i. e., the extremely flexed case, the head will be very long; in the second, i. e., where the head becomes deflexed, the caput is over the large fontanelle. I mention these cases of moulding and the large caputs to warn you not to be fooled by them, when making a vaginal examination, into thinking you have only an ordinary anterior case.

Treatment: In the early stages, when the head is high up and little progress being made, let the patient be up and around. Have her lie on the side of occiput. This throws breech to side, and the spine is straightened out, the occiput being forced down, while flexion is increased and *rotation* favored (De Lee). Lying on side is also said to increase uterine contraction. Some authorities recommend, in slow dilatation of the cervix, the introduction of a bag. I have seldom found this necessary, but have found that morphine, 1/6 to ¼ grain, given hypodermically, and having the patient to lie on her side quietly for an hour or two, will help matters considerably, both in the way

of dilatation and anterior rotation. *Watchful waiting* is the treatment in the *earlier stages.*

Later on, if spontaneous rotation fails to take place, I believe the thing to do is, under proper antiseptic precautions, and with ample assistance, thoroughly anesthetize the patient, and, after stretching by kneading the muscles about the perineum, introduce the whole hand gently and slowly into the vagina, and dilate the cervix with the hand, if necessary; grasp the child's head and turn it into an anterior position, assisted by the other hand on the abdomen; then hold it in this position, and allow the woman to come from under the anaesthetic; and, as she does so, withdraw the hand from the vagina, but continue firm pressure on the abdomen. I must admit, however, this manoeuver has sometimes failed in my hands; and the occiput may again be found in the hollow of the sacrum; but it is far safer, I believe, certainly for the child, than podalic version. I know some authorities recommend fully anaesthetizing the woman, ironing out the perineum, and going in, pushing the head up out of the pelvis, doing a podalic version, and delivering, but, to my mind, this is dangerous to both mother and child.

De Lee recommends the application of forceps, pulling the head down, then leaving it to nature to rotate the occiput anteriorly.

Hodges' manoeuver in deflexion cases is to push up on the head during the pains, with the hope of flexing the head and favoring anterior rotation. He also recommends the use of the vectis to rotate the occiput anteriorly. I am fortunate in having one of these antiquated instruments for your inspection. This little instrument I present is a very fine one of its kind, and well preserved. It was handed down to me, and is, I suppose, fifty years old. I am quite sure it has never been used.

Forceps: When the above methods have been tried, and little if any progress is being made, when pains are becoming weaker, and the woman has been in labor a long time, and especially if you have reason to believe she is getting up a toxaemia, you should immediately make preparation to deliver with forceps. Because of the gravity of all cases of this kind, I would recommend efficient assistants—a doctor and a nurse—and preferably having the patient in a hospital, if possible. Get everything ready first. A hypodermic of morphine may be given. Have the patient *deeply* anaesthetized, and put in a lithotomy position with thighs *extremely* flexed, and held wide apart by nurses; then, after disinfecting the parts both externally and internally (I use either a weak solution of tincture of iodine or 2 per cent solution of mercurochrome), I stretch the vagina by kneading or rolling the muscles between the fingers. I next introduce the well-lubricated gloved hand into the vagina, and accurately determine the position of the head by feeling anteriorly the ear. I then grasp the head with this same hand and rotate the occiput as far around as I can. I then apply the left or female blade of the forceps. Say, for example, it is a right occipito-posterior—and let me insist on the *cephalic application* in contra-distinction to the *pelvic* application,—I see that the forceps are properly applied with respect to the child's head, not the mother's pelvis,—and you can only be sure of this by having your whole hand in the vagina. After the first blade of the forceps is accurately applied, when the blade will have an anterior position with the handle projecting more or less transversely and to the woman's right, it may then be held by an assistant. The right blade of the forceps is then applied, with the hand still in the vagina, accurately and *cephalically*, and the handles should lock easily. Now remove the hand, grasp the handles of the forceps with the right hand, and, with the woman's thighs extremely flexed so as to tilt the pelvis as far forward as possible, take your left hand and push the patient's abdomen (the child's body) as far as possible to the patient's left (or have an assistant do it); at the same time, with the right hand, swing the forceps with steady but very gentle traction, outward to the patient's right, and then upward. I have usually been able to twist the head out, so to speak, by this manoeuver with one hand.

Precaution: There is a certain sense of feeling with your traction and swing of the forceps that the head is rotating and coming with you. If you feel that you are pulling against something that does not come, you had better not pull too hard, or probably not pull at all; else you may do serious damage to the child. As soon as the head is delivered and resolution takes place, you can see just how far you have rotated it.

I have sometimes found delivery of the shoulders a little difficult in posterior cases, and have had a tear or two of the perineum by

the shoulders, after the head had come through without a scratch. And I also believe serious damage has been done to the child by pulling too hard on its neck in delivering the body, after the head had been born.

610 *Maryland Avenue.*

DISCUSSION.

DR. M. B. SAVAGE: Dr. Moncure has given us a paper both interesting and practical. He has worked out this problem of treating occiput-posterior, by years of experience, to his own satisfaction and with best results for his patients.

The frequency of occurrence of occiput-posterior is said to average about 20% in all cases. 95% of these cases will rotate spontaneously during labor and deliver in the anterior position. Delivery in the posterior position is possible, but, as one will see, the brow passes beneath the public arch, causing a stretch upon the perineum equivalent to the occipito-frontal circumference which is greater than the sub-occipital-bregmatic circumference, which is the circumference of the fetal head producing the stretch upon the perineum at the time of the normal anterior position delivery. In the anterior position the occiput is flexed as it comes upon the perineum, and extension occurs as it rotates beneath the pubic arch. It is impossible for the flexion and extension to occur, if delivery should occur in the posterior position. The difference in the relative stretching of the perineum could be sufficient to prevent a severe laceration. There is likewise a real danger of extensive laceration of the perineum if a head should be brought over the perineum in the posterior position by means of forceps.

In conclusion, I would like to mention the treatment for occiput-posterior in a brief form, as given to me by Dr. A. M. Mendenhall, of the University of Indiana Medical School.

The most simple method is mentioned first, and the others according to their indication:

1. Let alone. 95% will deliver spontaneously during labor.
2. Postural treatment of patient to facilitate rotation, which means turning the patient upon the side where the fetal back can be palpated.
3. Rotation—external, combined, or internal.
4. Version is indicated more frequently than formerly, perhaps due to an improved technique by Potter. A cervix which is not fully dilated and a contracted pelvis are absolute contraindications.
5. Scanzoni forceps: Kielland forceps are frequently used in doing this maneuver, without necessitating reapplication.
6. De Lee's modification of Scanzoni method for rotation. The fetal head is grasped firmly by an instrument to prevent return to the posterior position while the forceps are reapplied.
7. Cesarean section.
8. Pubiotomy, etc.

DR. GEORGE T. MYERS: I have enjoyed Dr. Moncure's paper. I feel too much interference has been made in posterior cases before time is given for the head to rotate anteriorly. I should say conservatively that eighty-five per cent of labor cases present posteriorly and rotate anteriorly themselves, if left alone. In the persistent posterior cases, I feel the obstetrical operations to perform are rotation anteriorly, manually, if possible; the application of forceps by the Scanzoni maneuver; or internal podalic version. Bear in mind, forceps should never be applied to a floating head, that is to say, a head freely movable above the brim. Forceps should be applied cephalically in all cases, whether they are posterior or anterior, and the traction should be made in relation to the curve of Carus. Of course, this latter is not a true mathematical curve, but is the axis of the parturient canal. In my opinion, I feel Cesarean section should only be performed in posterior positions that have been neglected and there is a definite contraction of the pelvis. Internal podalic version is the operation of choice in many persistent posterior cases that cannot be rotated anteriorly manually, and where there is not great disproportion between the foetal head and the obstetrical pelvis. I have found this operation of life saving benefit, both to mother and child, in numerous cases.

In all obstetrical operations the patient should be fully anesthetized, the vulva shaved, bladder and rectum empty. In the delivery of cases away from a hospital, the patient should be at all times upon the edge of a table that can be improvised in the home and will take the place of the operating room table.

DR. C. J. ANDREWS: One who does a considerable amount of this work through a long period of time will develop methods which will be found to be satisfactory in most cases. Dr. Moncure has had such experience and his testimony should influence us greatly as to the methods which he favors.

There seems to be some difference of opinion as to the value of the Scanzoni method. Arthur H. Bill uses it almost routinely and is enthusiastic in his endorsement. James A. Harrar believes it to be dangerous and condemns it. All agree that waiting for full dilatation and advancement of the head out of the cervix, if possible, is very profitable. These labors are slower and more painful and require the use of various methods for relief of pain. Rectal ether has been particularly satisfactory to me. Most of the cases thus treated will rotate and deliver spontaneously. If they do not, it does not seem necessary to leave them for any considerable period of time. Rotation with the hand and then usual application of forceps is often satisfactory, but sometimes the occiput will go back before forceps can be applied.

During the past several years I have used the Kielland forceps—making a cephalic application. By using gentle traction and rotation, the head will rotate with the slightest encouragement. After rotation is complete, the forceps may be changed for ordinary forceps, if desired. Changing one blade at a time will insure against recurrence. This has been by far the most satisfactory method yet employed by me. Before using the Kielland forceps, I have occasionally done a version with great ease, after some unsatisfactory progress with other methods.

Posterior positions not infrequently complicate disproportion, and should not be confused with it. If satisfactory advancement is required before attempting delivery, this will be eliminated.

DR. G. BENTLEY BYRD: Dr. Moncure's paper and the various discussions seem to have very thoroughly covered the subject of occipito-posterior positions. It is needless to say that we have enjoyed and have been benefited by them.

There are two points, however, that I would like

to stress. *The first is*, the management of a posterior occiput depends upon the stage of labor in which it exists. During the first stage there are many cases in which the position is LOP or ROP at the beginning, that rotate spontaneously to an anterior position as the labor progresses. Therefore, a practice of "watchful waiting" during the first stage seems to me to be the logical course to pursue. The administration of sedatives to relieve the discomfort of the first stage pains, and thus allow the cervix to dilate completely, fulfills our obligations to the patient at this time.

Where the posterior position persists and the head advances in the abnormal position, we have an entirely different condition to cope with. Where the head has passed out of the cervix, and is being jammed in the pelvic canal with the occiput in the hollow of the sacrum, little is gained and often much is lost by waiting. This is the type of case that usually requires mechanical aid, and I am inclined to believe that the earlier help is given, the better our results. To say just what operative procedure to follow seems foolish and devoid of common sense. The experience of the individual operator to me seems to be the best guide. Personally, I have gotten good results where I have rotated the baby's head with forceps, removed the blades and reapplied them in the corrected position. Another may deliver by version, and so on; that is his privilege and, if he get results, do not condemn him.

Just one other point. When attempting to rotate a persistent posterior occiput with forceps, do not attempt to use any traction while turning the baby's head. Often the rotation is more easily done by actually disengaging the head before attempting it. Of course, forceps should be applied before disengaging it.

MANAGEMENT OF SOME UNUSUAL FRACTURES.*

By MARSHALL J. PAYNE, M. D., F. A. C. S., Staunton, Va.

In the management of some cases of unusual fractures, the treatment applied has adhered closely to mechanical and surgical principles. The conservative attempts employed to secure anatomical and functional restoration appear warranted by the results which have been obtained. The histories of the cases follow the form (No. 19) suggested by the American College of Surgeons.

The management of any fracture is of vital importance. The outcome or the result in a fracture case bears an important relation to the patient, to the company (employer), and to the surgeon.

The object of the treatment should be to conserve life and, as far as may be possible, secure anatomical and functional restoration. Any limitation of the restoration secured may seriously affect the earning capacity of the individual and affect his relationship and usefulness as an employee. Any inability to perform the duties of his former occupation acts directly to lessen the earning ability of the injured, both for himself and for the employer—the company. The economic aspect and importance of the subject of fractures should be thoroughly appreciated by the profession. The exercise of careful judgment is required, in order that the injured may not be unduly detained from his duties, and that he may not suffer from some partial or permanent disability. The subject of fractures, therefore, is of paramount importance and interest to the industrial surgeon. The everyday increasing use of the automobile and high-powered machinery is bringing fractures more and more frequently and, likewise, is bringing more and more unusual types of fractures.

The steps or rules of reduction for classic fractures may not be sufficient to overcome the existing deformity of an unusual fracture. It is required usually that the existing deformity shall first be increased and that this line or step of the reduction force shall be continued even to the extent of acute angulation. The acute angulation serves to unlock the bony fragments and to bring the fragment ends into closer relationship. The next step then is to retrace the direction of displacement, at the same time making traction and counter traction, while using careful manipulation; that is pressure, counter pressure, and rotation, until the bone is brought into correct position and alignment. One can well see, however, that at times such efforts are impracticable, unsuccessful, harmful, and even dangerous. In recent years an increasing number of fractures have come under my care in which it has not been possible to effect satisfactory reduction by manipulation. This has been especially true in fractures of the upper extremity. In case manipulation fails to secure satisfactory reduction in upper extremity fracture, then resort to traction apparatus should be made. The plan of traction and counter traction as employed successfully in fractures of the lower extremity may well be applied to unusual fractures of the upper extremity. I am convinced that this plan of treatment of fractures has not been used as often as it deserves to be. This is particularly true in difficult forearm fractures of both the ulna and radius. This conclusion I wish to stress.

C. A. R. Case 7734. Injury sustained September 5, 1922, by motorcycle accident. The X-ray examination revealed "an oblique frac-

*Read at meeting of Norfolk and Western Railway Surgeons' Association in 1927.

ture of the radius 3 cm. above the joint on the anterior surface and extending downward and backward to near the epiphyseal line. The lower fragment is angulated about 15 degrees forward. The ulna is dislocated backward. The arm is in splints." Reduction was made. "A second series of plates show the hand in a plaster aeroplane splint. The alignments are excellent and the dislocation of the ulna is corrected." September 19th, "the arm seems in perfect condition", Dr. J. F. W., Charlottesville, Va. In this very unusual fracture, the reversed Colles', the method of reduction is in principle similar to the reduction of a typical Colles' fracture though the steps of reduction are reversed and are first hyperflexion, traction, and then extension, leaving the hand in the position of dorsal extension. The "cock up" areoplane splint is used.

J. H., white, male, Syrian. Injury to the right forearm sustained January 9, 1927, while cranking an automobile. A rather deep cut in the tissues of the back of the hand, and numbness, and loss of sensation of the ring and little fingers, existed as complications. An ulnar nerve injury was suspected. At the patient's home under ether anaesthesia, an unsuccessful attempt to reduce the fracture was made. The patient was then removed to the hospital and an X-ray examination disclosed "the fractured ends of the radius in good apposition but the ulnar ends widely separated." Under anaesthesia and with the aid of the fluoroscope, an effort to improve the reduction of the ulnar fracture was made. With great difficulty, after resorting to acute angulation the ulna was made to come into excellent position, but the radius was not then in perfect position. Knowing full well if the ulna is correctly reduced that the radius will, so to speak, take care of itself, it was decided to leave well enough alone. The forearm was then placed in anterior and posterior splints. The fracture was well retained in the obtained position and firm bony union was prompt. The ulnar nerve injury has persisted with but slight improvement. To date, loss of sensation, muscular wasting in the distribution of the ulnar nerve in the hand, and an inability to separate the fingers of the affected hand continues.

The unusual features of the case were the nerve injury and the difficulty of securing apposition of the ulnar fracture. It is now believed that better functional restoration would have been obtained by the use of a traction splint. The impairment of the function now existing is for the finer execution of the movement of the hand and fingers.

Jane P., white, female, 12 years. Injury sustained by stepping on a ripe cherry which had fallen on the tin roof of a garage. Marked angulation deformity of the left forearm, with bone ends dangerously near penetration of the skin. It is remarkable that this was not an open fracture.

Reduction under anaesthesia with immediate X-ray examination disclosed faulty position of the bone ends of ulna and radius. A heroic attempt was made, at once, to bring the bone ends into correct alignment. It was impossible to bring the ulna and radius in place at the same time, or retain either one in correct alignment. The child was put to bed and continuous traction was applied, using fourteen pounds weight. Later, a modified Jones arm splint was used, with a traction arrangement added to the splint. Perfect functional restoration was obtained. The last X-ray shows the anatomical restoration not altogether perfect, though the contour of the forearm is excellent.

I am fully converted to the value and ease of using traction in forearm fractures by this traction splint. Unusual feature: entire inability to secure any bony apposition by manipulation. Lesson: beware of putting up fractures of both the ulna and radius without X-ray examination following the reduction.

H. J. J., white, male, 9 years. Injury sustained July 21, 1927, in falling from hay barn. Several days after the injury, parent was advised to have X-ray. The examination disclosed a "complete fracture of the upper end of the humeral shaft, without any displacement." The unusual feature: no displacement of fracture of upper end of humerus. The displacement in this fracture is usually marked. The treatment was simple retention. The restoration was perfect. The lesson: submit all apparently trivial shoulder injuries to careful X-ray examination.

S. S., Jr., white, male, 9 years. Injury sustained April 2, 1927, in an automobile accident. The X-ray disclosed an over-riding fracture of upper end of the humerus. Under the fluoroscope, every effort, including acute angulation, was made to effect reduction. All failed. The arm was then placed in external rotation on a humerus abduction splint with traction. The child was comfortable and the

anatomical and functional restoration was perfect. Unusual feature: acute angulation under ether failed to effect any reduction which could be retained.

More and more use of traction humeral abduction splint should be made.

J. K., white, male, child. Injury sustained June 2, 1924, falling from "bar". X-ray examination disclosed fracture of lower end of right humerus, complicated with displacement. Marked swelling present. Acute flexion or Jones position maintained. Massage and passive movement to secure full extension of the forearm were carried out till October 1, 1924. The final results justified the prolonged effort to secure full use of the joint. The anatomical and functional restoration were perfect. I cannot too strongly stress the value of the acutely flexed position in the treatment of fractures of the humeral condyles. The position in this case was maintained somewhat longer than it should have been.

The first case, that of a young girl, in which the acute flexion treatment was used by me was one of combined fractures of the ulna, radius and a typical T-fracture of the condyles of the upper left extremity. The results were perfect.

The acute flexion should be reduced gradually at the end of three weeks.

H. L. L., white, male. Injury sustained in motor cycle racing accident. The deformity in both legs was very marked. The limbs were lying acutely distorted and the bone ends were dangerously near perforation of the skin. Loss of sensation in right foot and swelling were marked. Pain was severe and shock was pronounced. A lacerated wound below the knee of left leg and a small wound in right leg were bleeding. X-ray examination made September 10, 1927. The left tibia and fibula showed comminuted fracture 13 cm. above the malleoli with anterior external angulation of the lower fragment. The right leg showed a double comminuted fracture of the tibia beginning 16 cm. below the superior articular surface, the second fracture being 6 cm. below this point, with the intervening fragment being entirely detached and displaced backwards. This fragment was also secondarily fractured. The fibula showed a split fracture, partially longitudinal and partially transverse, extending from a point 10 cm. below the head of the fibula to a point 15 cm. below the head, with over-riding of the fragments of about 2 cm.

Examination made through the cast after the fractures had been set showed excellent lateral alignment of the fractures of the left tibia and fibula anteriorly and posteriorly. There is a forward angulation of the lower fragments of the tibia of about 1 cm., the posterior border of the lower fragment being about the center of the upper fragment. The fibula is straight.

The right leg showed the fractured fragments of the tibia in remarkable excellent alignment, anteriorly and posteriorly, but with an inward angulation of the split off fragment, the external border of this fragment being in contact with the internal surface of the upper fragment. The over-riding of the fibula has been corrected and the fractured ends are in good position. A second fracture of the fibula is shown 10 cm. above the tip of the malleolus. The upper fragment over-rides the lower fragment about 1 cm. and is external to it. The anterior-posterior line of the fragments, however, is excellent. The Thomas modified traction leg splints were used for both legs.

October 19, 1926. No union. There was lack of union in all of the fractures of the right leg at examination on February 20, 1927. The fractures of the left leg had united. Union began to take place in the right leg early in March and was complete by April 1, 1927. The patient received cod liver oil, fresh milk, calcium bearing foods and was given parathormone hypodermically, Min. V, every other day. He was allowed to be out of doors in his car. He had two attacks of actue pyelitis and an appendectomy during his confinement.

Final Results. The anatomical restoration is good, and the functional restoration is excellent. He says he has "two good legs." When asked which one is the best, the answer is, "Both." He can carry a 200 lb. weight easily, the limbs are practically of equal length and he walks without any limp. The loss in stature is one-half inch.

Traction, the treatment adhered to in this case, must be credited with the final results.

The unusual features of this case were the extensive comminution, the delayed union, the final successful outcome, and excellent functional restoration.

J. L., colored, single, male 21, laborer, Staunton, Va. He was severely injured by heavy truck, while at work on the highway. The truck backed over the left thigh and pel-

vis. The injury sustained was a severely comminuted, multiple and markedly displaced fracture of the upper one-third of the left femur together with a double fracture of the true pelvis. The fracture lines in the true pelvis were observed in the outer end of the ileopubic ramus, extending into the acetabular fossa and a companion fracture of the ischiopubic ramus near to the tuberosity of the ischium. The latter fracture was sharply displaced. The comminuted fracture of the femur had many fragments, the shaft was split longitudinally, and all of the fragments were displaced and separated. The soft parts were contused and great swelling was observed. The shock was profound.

The plan of treatment carried out was as follows:

Shock was combated and then a careful X-ray examination was made. Ether was given and the left lower extremity was abducted, flexed at both knee and hip as acutely as possible, and a plaster dressing, or cast, was applied by spica bandages to the pelvis and to both lower extremities as far as the knees. Wide adhesive straps were previously applied to the outer and inner faces of the left thigh to the knee, extending well up to the great trochanter and to the crotch of the limb.

The plaster dressing was allowed to set, and then was cut down the front of the left thigh. Using the Balkan frame, traction was now applied by weights, and the legs were kept comfortable by pillows. The results: firm prompt union, with some deformity. The deformity especially observed was a thickening of the bone,—that is, the bone was more massive. A slight limp, with shortening of not more than one inch. The man returned at the end of four months to his work on the highway. The deformity is apparent only on examination.

I feel sure that the most enthusiastic advocates of the open treatment of fractures would have hesitated to adopt operative interference in this case.

W. O. B., white, male, Staunton, Va. Injury was sustained December 19, 1926. The Ford coupe which he was driving, slipped off the "icy" cement roadway, going over the side bank but not turning over. The driver was not thrown from the seat.

The patient was disabled till February, 1927, when he resumed his occupation, that of traveling tea salesman, but was unable to continue work later than March 1, 1927. He was again completely disabled from March 1, 1927 to August 18, 1927, when he was first seen by the writer. He had in the meantime been X-rayed, and carefully "gone" over by several very competent men. A very careful history and examination fixed the complaint as having origin in the accident of December 19, 1926. The patient was unable to walk for more than a few feet at a time. Any effort to move the left lower extremity was painful and, on attempting to stand or walk, the pain in the left lower limb was increased. The left lower extremity could not be lifted easily from the floor and, in consequence, on walking, the gait was dragging. No loss of sensation, and no abnormality of any of the reflexes were noted.

The tentative diagnosis of a fracture of the vertebrae, made August 18, 1927, was confirmed by the X-ray examination made August 29, 1927, which revealed "a complete fracture of the right inferior, articular process of the fifth lumbar vertebra." It was felt that the occurrence of the symptoms noted on walking or standing was due to oedema of the cord and the nerve trunks. The patient was kept in bed for one week and during this time he was more comfortable. A well-fitting plaster cast or jacket was then applied, using moderate traction in the Sayre suspension apparatus.

Complete relief was obtained and the patient now walks at will, without pain, fatigue, or impediment.

Caution: Do not omit careful and repeated X-ray examinations in all back injuries till the diagnosis is assured.

The weight of the superimposed vertebral column, i. e., the head, and shoulder girdle, should be removed from the injured vertebrae and transferred to the pelvic girdle, with fixation of the parts. The fixation is difficult especially in fractures as low as the fifth lumbar vertebra. The jacket appears to be the most convenient and suitable device for this fracture. Later a celluloid jacket or some proper appliance may be used.

Whenever traction is to be made in order to effect reduction of fractures of the vertebrae, or in the application of any fixation dressing, great care must be exercised.

It has been taught properly that, in fractures of the vertebrae, cord injury is the important factor to be considered. In obscure and unusual fractures, without cord involvement, it must be remembered that partial or

complete disability may arise, solely, by reason of the fracture of the vertebrae. The case cited above is the second case of fracture of the vertebrae which has come under my care in the last eight months. The first case was diagnosed clinically, yet an incomplete X-ray examination failed to disclose the lesion. A later X-ray showed the fracture. In the case above cited, that of W. O. B., two X-ray examinations made by competent men overlooked the fracture. The last examination was conclusive.

It is imperative that repeated X-ray examinations be made should any clinical symptom, sign or complaint persist.

Watch back complaints following or in connection with injuries. Oversight may be costly.

PREVENTABLE DISEASES AND PREVENTIVE TREATMENT.*

By SAMUEL H. NIXON, M. D., Christiansburg, Va.

The physician of the past has been more concerned with the treatment of disease than its prevention, but the constant evolution of medicine has made him a very adaptable person, and, if he can be convinced of its desirability, he will soon increase his knowledge in the field of preventive medicine.

We possess specific preventives for a large number of diseases that continue to collect their toll of human life, suffering and poverty. Every person deserves and has the right to expect protection from diseases that can be prevented.

Most diseases are affected by preventive regimen, such as isolation, care of infected discharges, personal cleanliness, and sanitary surroundings. But these measures are not within the scope of this discussion, and I shall confine my remarks to therapeutic measures in the prevention of organic disease.

Diphtheria: We have made great progress in the treatment of diphtheria, but with the specific remedies we have at our command we could accomplish more, and there is abundant work for all of us to do, to rid mankind of this great scourge. When diphtheria occurs in a family or institution, every child and adult should have their immunity determined by the Schick test. The children who give a positive Schick test, and who have had direct exposure, should be immunized with prophylactic doses of antitoxin. Adults who are not immune should be carefully watched.

In our program for prevention every child between six months and fifteen years of age should be given attention. Children between the age of six months and six years should be given toxin-antitoxin without the Schick test. Those between the age of six years and fifteen years, should be given the Schick test, and the positive reactors given toxin-antitoxin.

The Schick test is made by injecting intradermally on the flexor surface of the forearm 1/50 minimal lethal dose of toxin so diluted in physiological sodium chloride solution that this amount is given in 0.2 c.c. solution. The injection is made under aseptic precautions with a No. 27 gauge needle with the eye turned up so the needle will not be inserted too deeply. The control test is given about one inch below the toxin on the same arm. The control consists of the same material as the toxin except that it has been heated to 75 degrees centigrade for five minutes. If positive, there will be a slight redness which will appear slowly at the site of injection of the unheated toxin in from twenty-four to thirty-six hours. The reaction reaches its height on the fourth day, then gradually disappears. At its height the reaction shows a circumscribed area of redness and slight infiltration measuring from 1 to 2 cm. in diameter.

Immunization is accomplished by three weekly injections of 1/10 lethal dose of diphtheria toxin plus neutralizing antitoxin. The first dose is 0.5 c.c. and the last two doses are 1 c.c. each. Immunity is complete in from one to six months. Eighty-five per cent are immunized with three doses. Ninety per cent of those immunized stay immune six years or probably for life. Diphtheria morbidity in the immunized and Schick negative together is only about one-tenth of the rate in the unprotected population.

Scarlet Fever: Through the work of G. F. and G. H. Dick, Dochez and others, we have a specific scarlet fever antitoxin, an effective immunization process with detoxified toxin of scarlet fever, and Dick's skin test to determine the patient's susceptibility to scarlet fever.

The Dick test consists of intradermal injection of one skin test dose of scarlet fever toxin so diluted as to be contained in 0.2 c.c. solution. The injection is made on the forearm. The reading is made twenty-four hours later,

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positive reaction consisting of faint red area of less than 2 cm. to intense red area of 3 cm. The reaction subsides in forty-eight hours. Some of the results of the Dick test are inconstant, as a few patients with negative tests have developed scarlet fever. Further work is necessary to correct this weakness of the test.

Active immunization of the positive Dick test reactors is accomplished with two intramuscular injections of scarlet fever streptococcus toxin in a 2 per cent solution of sodium ricinoleate, so that the concentration of the toxin is 3,000 skin test doses per cubic centimeter. The first dose is 3,000 skin test doses, and the second is 5,000 skin test doses given one week later. The process of immunization has been made mild, safe and rapid. Colby has shown that by this method 87 per cent of children under eight years and 77 per cent of older children susceptible to scarlet fever have been made negative to the Dick test within eight days. The rapidity with which immunity occurred was due to the large dosage of from 3,000 to 5,000 skin test doses.

In case of a threatened epidemic of scarlet fever, we have potent measures to control it,—antitoxin for those infected, and immunizing detoxified toxin for those that are susceptible.

Typhoid Fever: The control of typhoid fever is the greatest triumph of man in the field of preventive medicine. This has been made possible through improved sanitation and prophylactic typhoid vaccine. Typhoid prophylaxis is very efficient, as shown by the health record of the Maneuver Division of the U. S. Army at San Antonio, Texas, during the summer of 1911. The division had a mean strength of 12,801 men. All were treated with typhoid vaccine. The result was that from March 10th to July 10th only two cases of typhoid fever developed, with no deaths. One case had not completed his immunization; the other had missed inoculation. There are many other reports just as impressive and convincing. It would be a mistake to immunize the population to typhoid to the neglect of general sanitary measures. The rational program is the intelligent use of both measures.

Prophylactic typhoid immunization is accomplished by three subcutaneous injections, at intervals of five to seven days, of dead typhoid bacilli. The first dose is 500,000,000 bacilli; the second and third doses are 1,000,000,000 bacilli each.

Rabies: There is no more hideous disease known to mankind than rabies; and none calculated to fill the human breast with more fear. It is little wonder that the beneficent Pasteur was attracted to investigative research of this horrible disease, and, with the skill of a master, he has given to us our prophylactic treatment which has stood the test of time and remains practically the same today.

The preventive treatment is divided into three phases:

1. Muzzling dogs. By muzzling all dogs, England was able to exterminate rabies within two years. Later, through the senseless work of the Societies for the Prevention of Cruelty to Animals, the dogs were unmuzzled with the prompt re-appearance of rabies.

2. Care of wounds inflicted by animals infected with rabies. Prompt cauterization of wounds with nitric acid is the most efficient treatment.

3. Pasteur's treatment for those bitten by infected animals. This treatment consists of from fourteen to twenty-one daily injections of an emulsion prepared from the spinal cord or brain of an animal infected with rabies. The number of injections which should be administered varies somewhat with the location and extent of the wound of entrance. It has been found that when the hands, feet or legs are infected, the case is usually milder than when the bite is about the head or neck. In the latter instance, the disease develops rapidly and is prone to be fulminant. In the milder cases, fourteen injections usually suffice; in the severer ones, twenty-one injections should be used.

Without the rabies vaccine, the mortality of bitten persons is from 15 to 20 per cent; with the use of vaccine, it is about 0.5 per cent.

Rabies vaccine appears on the market in aseptic syringes of one dose each. The physician is able to treat the cases that come under his care quickly and efficiently.

Smallpox: To Jenner is due the credit of giving vaccination to the world. Vaccination was the first specific prophylactic measure given to man; and it produces an active immunity to smallpox. Most of the anti-vaccination sentiment and propaganda is due to ignorance and organized medicine cults who use it for their personal gain.

Vaccine virus is the specific principle in the matter obtained from the skin eruption of ani-

mals having cow-pox. Vaccination produces immunity to smallpox for an average period of seven years, and protection may be renewed by a second vaccination. Persons successfully vaccinated on two occasions are usually immune for life. If vaccination and re-vaccination are systematically and generally carried out, complete protection is conferred to a community or nation. What more could we desire or demand of a simple prophylactic measure?

Tetanus: In the days of Hippocrates the unfortunate victims of tetanus were believed to be suffering with the curse of the evil spirits. Probably the convulsions with opisthotonos and sardonic grin appealed to some superstitious, imaginative mind to thus speculate on the etiology of this gruesome spectacle. But time and science progressed a step further, and in the middle ages we have the humoral theory; then, with modern times, came the correct solution—the germ theory.

The prevention of tetanus is divided into two parts:

1. Cleansing and disinfecting soiled wounds.
2. Administration of prophylactic tetanus antitoxin of 1,500 units following penetrating and soiled wounds. In very badly macerated and contaminated wounds it may be necessary to give antitoxin every eight to ten days until there is no further danger.

Malarial Fever: The daily administration of five to seven grains of quinine sulphate to individuals is an efficient and practical prophylactic measure, when residents of non-malarial countries go into malarial localities, especially in the rural districts, for a short period of time.

In Italy, on the Isthmus of Panama, and other countries where malaria is prevalent, the residents take quinine in prophylactic doses for years without complaint or injury. However, quinine prophylaxis is at best only tentative and does not take the place of mosquito suppression.

Measles: During the past few years much progress has been made in solving the etiology and treatment of measles. In 1918, Nicolle and Conseil reported satisfactory results from the use of convalescent measles serum for conferring temporary immunity to measles. The dose of 3 to 6 c.c. of ordinary convalescent serum was used. When the serum of adults who give a past history of measles is used, the dose is 25 to 30 c.c. The immunity lasts about four to five weeks.

Tunnicliff, Thomason, Caronia and others have isolated a green-producing diplococcus which they believe is the specific organism of measles. Tunnicliff and her co-workers have further substantiated their claims as to this organism by producing an immune goat serum, which seems to produce passive immunity of from two to four weeks, or longer in 90 per cent of the children treated; in the other 10 per cent the disease occurs in an attenuated form. The dose is 6 to 7 c.c. intramuscularly, given not later than five days after exposure.

Soon it is hoped that the Tunnicliff serum will be easily available for all who desire it. It will find its greatest usefulness in immunizing children in the following classes:

1. Children of tender age.
2. Children infected with other diseases, such as whooping cough, pneumonia, etc.
3. In suppressing epidemics in institutions.

Whooping Cough: Whooping cough is one of the contagious diseases that continues to elude our efforts of solution.

The prophylactic value of pertussis vaccine remains doubtful, with authors giving divergent opinions, although it is quite extensively used in clinics and general practice with the hope of producing a certain degree of immunity and decreasing the complications during the attack.

The limited time of this discussion will not permit further consideration of preventive treatment of other important diseases, but suffice it to say we will be abundantly rewarded, if we bear in mind such effective preventive measures as: (1) iodine in adenomatous goiter and cretinism; (2) proteins in pellagra; (3) organic acids in scurvy; (4) throat hygiene and tonsillectomy in tonsillitis rheumatic fever, rheumatic endocarditis, and chorea; (5) prenatal care in eclampsia; (6) asepsis in puerperal septicemia; (7) silver nitrate in ophthalmia neonatorum, etc.

Periodic health examinations on each birthday for the detection of infectious and degenerative diseases is a creditable accomplishment of preventive medicine, and it should be encouraged by all physicians. Many conditions can be detected in their incipiency only by the systematic examination of the apparently healthy.

Each of us in our intimate contact with patients can be of further service to humanity by skilfully imparting to our clientele pertin-

ent preventive health knowledge which we possess.

BIBLIOGRAPHY.

Park, William H.: Toxin-Antitoxin Immunization Against Diphtheria, *J. A. M. A.*, 79:1584, 1922.

Zingher, Abraham: Standardization of Diphtheria Toxin for the Test and of Heated Diphtheria Toxin for the Control; Methods of Diluting the Toxin, *J. A. M. A.*, 78:490, 1922.

Hayne, James A.: Problems in the Control of Diphtheria, *J. A. M. A.*, 81:2073, 1923.

Crooks, T. T.: Schick Tests and Toxin-Antitoxin Immunization, *J. A. M. A.*, 84:196, 1925.

Dick, George F., and Dick, Gladys H.: Therapeutic Results with Concentrated Scarlet Fever Antitoxin, *J. A. M. A.*, 85:1693, 1925.

Dick, G. F., and Dick, Gladys H.: A Skin Test for Susceptibility to Scarlet Fever, *J. A. M. A.*, 82: 265, 1924.

Dick, G. F., and Dick, Gladys H.: Scarlet Fever Toxin in Preventive Immunization, *J. A. M. A.*, 82:544, 1924.

Lees, H. D.: The Dick Test with Active and Passive Immunization for Scarlet Fever, *J. A. M. A.*, 88:1133, 1927.

Colby, Woodard: The Control of Scarlet Fever in Institutions by Active Immunization with Toxin Detoxified with Sodium Ricinoleate, *J. A. M. A.*, 87:919, 1926.

Larson, W. P., Huenekens, E. J., and Colby, Woodard: Immunization Against Scarlet Fever with Toxin Detoxified with Sodium Ricinoleate, 86: 1000, 1926.

Rosenau, Milton J.: Preventive Medicine and Hygiene.

Park, W. H., and Freeman, R. S.: The Prophylactic Use of Measles Convalescent Serum, *J. A. M. A.*, 87:556, 1926.

Zingher, Abraham: Convalescent Whole Blood, Plasma and Serum in Prophylaxis of Measles, *J. A. M. A.*, 82:1180, 1924.

Tunnicliff, Ruth, and Hayne, A. L. Prevention of Measles by Immune Goat Serum, *J. A. M. A.*, 87:2139, 1926.

PREVENTIVE MEDICINE—RELATION OF OBSTETRICS AND PEDIATRICS.*

By T. R. BOWERS, M. D., Bristol, Va.

The stages in human life that are considered from an obstetric and pediatric viewpoint are those in which preventive medicine has its greatest opportunity. The fact that over 15,000 puerperal deaths, and 100,000 infant deaths in the first year of life, and over 100,000 still-births occur in the birth registration area of the United States annually stimulates us to pause and consider some means of preventing this extreme loss of life during and subsequent to child-birth.

That obstetrics as a science has not advanced in proportion to other branches of medicine is an admitted fact, which arouses not only the profession, but the laity as well. The United States unfortunately enjoys even less progress in this particular than many other countries. According to the latest available statistics, the maternal mortality rate is higher in only one other civilized country, Chile, and the United States rates nineteenth among the twenty nations of the world which offer data on this subject. Allowing for errors in statistics, it is evident that the present obstetrical practice does not assure the women of this country the safety which they have the right to demand, and which we should be ready and able to give. It is our duty as physicians to study this subject from the preventive viewpoint in order to improve this appalling condition. Certainly our knowledge in the technic of obstetrical procedures has increased, if only indirectly through the advances of medical science in general. Yet the maternal mortality rate now is even higher than that of ten years ago. The most deplorable fact about this is that more than 40 per cent of these deaths are due to puerperal septicemia, a condition which, with our present knowledge, should rarely ever occur. The deaths from this cause show an increase in the past few years. According to a report of the Metropolitan Life Insurance Company covering the first nine months in 1927 among their policy-holders in the United States, the total death rate incidental to pregnancy and child-birth showed a slight decrease from the corresponding periods in 1925 and 1926; while the deaths attributed to puerperal septicemia showed an increase, the decrease being due to a lower rate in puerperal albuminuria and other conditions. This shows the beneficial results of prenatal care, and the failure in natal and post-natal care. In New York City the death rate among those who receive proper prenatal care is 60 per cent less than that of the city as a whole. Similar reports are made from Boston.

We sometimes feel that the midwife is probably our greatest problem in bringing about an improvement in our obstetrical situation, but, upon studying the statistics, this is questioned. Baker found that in four states in which there are no midwives practicing there is a higher maternal death rate than that of the entire birth registration area; while in four other states in which midwives report more than 20 per cent of births, the death rate is even lower than that of the entire birth registration area. These facts are sufficient to

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show that there is something wrong with the physicians, which requires equal investigation and remedy as the midwife. Baughman's recent report, after a careful study of the midwife situation in Virginia, is fairly convincing that, for the present at least, the midwife is serving a need in certain localities and rural sections which, on account of economic conditions, cannot be filled by the physician. The solution of the midwife problem seems to be along the line already started by the State Board of Health—that of education in prenatal care. As this is done, the public will gradually appreciate the advantages of it, and in turn a larger percentage will eventually consult the physician, and the midwife will be automatically eliminated. If this goal is to be reached, the physician must naturally render a type of service that will demand it, for, as long as pregnancy is treated in an indifferent manner by the physicians, the public will treat it likewise.

In the meantime, while we must have a certain number of midwives practicing, we must co-operate with the State Board of Health through the Public Health nurse in giving instruction to the midwife, as well as lending assistance in abnormal cases. The nurse promises to be a great help in this work, serving as a liaison between the doctor and patient. The work being done through the University of Virginia, under direction of Dr. L. T. Royster, is a step forward, and exemplifies the value of this type of work. Through such efforts as this, every pregnant woman will eventually be able to have the services of a physician.

Neither the physician nor the midwife can be held entirely responsible for much of the mortality, as the pregnant woman, who neglects to avail herself of any advice until an abnormal condition has reached an advanced stage and her life is already endangered, is responsible for a certain percentage of deaths. Therefore, we, as physicians, have another responsibility, which is urgent, that of educating the laity to the importance of consulting their physicians early in pregnancy. Many women suffering from chronic diseases, such as syphilis, albuminuria, tuberculosis, cardiac conditions, etc., must be treated at the very commencement of pregnancy. We know that many of these cases that terminate unfavorably, if given proper care and treatment early and throughout pregnancy, would have a favorable outcome. Kerr states that, "if the pregnant women are suitably treated, the graver toxemias seldom develop". This view is also expressed by Baughman, who says that "toxemias associated with convulsions account for about 50 per cent of obstetrical deaths, and cases that attend the dispensary and receive proper prenatal care do not have convulsions." Therefore, by developing prenatal care, we can reduce our mortality rate by 50 per cent.

What is this suitable, or proper, prenatal treatment? Briefly mentioned, it should include:

1. A careful history, with particular reference to previous pregnancies and anything pertaining to rickets; and a thorough physical examination upon first visit.
2. Wassermann test, urinalysis, and further blood study, as indicated.
3. Careful and accurate pelvic measurements in all primiparas, and in multiparas presenting a history of dystocia.
4. General instruction as to proper diet, hygiene, exercise, etc.
5. Subsequent consultation and checking blood pressure and urine at 3 to 4 weeks' intervals, and further detailed advice, as indicated.
6. Determination of position of fetus at least six weeks before expected confinement. Correction of abnormal positions, thereby reducing the incidence of complications of labor.
7. Institution of proper treatment, as indicated, at any time.

With this practice one finds the conduct of labor greatly simplified. To quote Baughman, "a woman with good prenatal care is more than half delivered". I think every one will agree that one's compensation is certainly more than half earned. However, I believe this service should be rendered conscientiously and consistently, and our fees increased in proportion to the additional service rendered, over the old practice of "catching the baby and tying the cord", ofttimes with little observation to asepsis during this procedure. To quote Baker again, she is "convinced that, if all obstetricians and all general practitioners who attend confinement cases would include continuous prenatal care as a vital part of their conduct of all obstetrical cases, an immediate and definite decrease in the maternal mortality rate would be assured".

Brevity prevents full consideration of the conduct of labor, but a few points must be mentioned:

1. The increasing tendency towards operative procedures. These often result in morbidity, if not in mortality. It has been found that 60 per cent of the gynecological operations performed are a direct result of poor obstetrics. This is where we need to find ourselves and remember that the life in our hands is more valuable than a little of our time. The unwarranted and hurried application of forceps cannot be too strongly condemned. In my practice, which is rather limited, I have found it necessary to apply forceps in only one case. This case was one of unexpected disproportion between the size of child and pelvis of mother, and was finally delivered by version, with a still-birth. I feel that this case was a failure, as it does not come up to our aim—"a healthy mother in possession of a healthy baby". This case is referred to only to show that better judgment would have elected a Cesarean operation. Ofttimes we hurriedly apply forceps to save our patients time and suffering; this should not be done on account of the accompanying dangers. The general operative incidence in obstretrics in the United States varies in different sections of the country from 10 to 30 per cent, in contrast to 4 per cent in the several Scandinavian countries. We have reviewed the advantages of prenatal care, but of what value is this if we do not continue our conservative treatment through labor and prevent the undesirable incidents following unnecessary operative procedures. Of course, there are a certain percentage of cases that have complications sufficient to warrant some operative procedure, and in these cases comes the demand for obstetrical skill and management, with deliberate judgment in the election of the safest procedure toward approaching our aim. If this is done, surely the 10 per cent maternal death rate due to instrumental delivery and operative procedures, including Cesarean section, can be greatly reduced, as well as the fetal mortality incident to delivery. The birth injuries in this way would be reduced to a minimum.

2. Sutelan, reporting the treatment of abnormal cases at the New York Lying-In Hospital, states that, in cases where engagement does not take place with onset of labor, if the pelvis is not contracted, or if only slightly so, and the condition of the mother and child warrants interference, version is the most useful procedure. They feel that, if there is any question as to the capacity of the maternal pelvis, Cesarean operation is much safer for both mother and child, provided the early part of labor has been managed correctly, and treated as a potential Cesarean case. In cases where engagement is complete and the progress of labor has stopped, forceps are used.

3. Pituitrin needs but a few words. In reviewing the literature, I find it recommended only as an aid in controlling post-partum hemorrhage, and occasionally in cases of definite uterine inertia. Its use otherwise is strongly condemned. DeLee says, "it is criminal to give pituitrin while the baby is in the uterus". We are seeing the bad effects of the promiscuous use of this dangerous drug every day.

4. In cases of eclampsia, more conservative treatment promises better results than hurried deliveries and operation with their added strains to these already heavily burdened toxic cases.

5. None of these procedures should be undertaken under less aseptic conditions than any other surgical operation. This means hospitalization of our patients, the complicated ones at least, and I know of no other one thing that will offer as much protection, or contribute as much to the welfare of our patients.

Pediatrics, as a science, contrary to obstetrics, has had a remarkable development in the past few years, and is now one of the most important branches of modern medicine. Still, there is much room for development and further progress, especially in its relation to preventive medicine. The present practice of preventive medicine in pediatric limits is far behind our knowledge, and it is our duty to devote more time and attention along this line.

Let us review the situation briefly. Of the 200,000 infant deaths in the first year of life in the United States annually, about 50 per cent are due to complications of pregnancy or labor, and must be prevented by improvement in obstetrical practice, as outlined in the first part of this paper. The remaining 100,000 deaths must be studied from the viewpoint of pediatrics. Good obstetrics is accepted as a most important preventive measure in pediatrics, and so does pediatrics in conjunction with obstetrics offer a great service. The close relationship of these two branches is being appreciated more all the time, and in many hospitals the after-care of the baby is left to the pediatrician, who follows it and advises the mother upon leaving the hospital as to the proper care towards keeping the baby well.

Everyone is realizing the advantages of this phase of preventive medicine, and the profession, where any effort is made, is having little trouble in securing the co-operation of the parents in their attempt to "keep the well baby well". This type of work embraces about half of my practice and I find it profitable and satisfactory both to me and my patients.

Still there are a number of maladies, which altogether claim over 100,000 lives in the first year, and a lesser number in older children as the age progresses, all of which, with proper preventive measures, could be greatly reduced. A recent report by the American Child Health Associations credits Johnson City, Tenn., with a death rate of 160 in 1,000 in first year of life, the highest in the United States, with Staunton, Va., next, with a rate of 156 in 1,000. The lowest rate was found to be in Portland, Ore., being only 39 in 1,000; New Haven, Conn., St. Paul, Minn., and Cambridge, Mass., with 56 in 1,000, being lowest among the larger towns. In studying this situation, our responsibility is immediately recognized. Certainly we can see the great need of the medical profession to devote a larger percentage of their time individually toward preventive medicine, as well as the necessity of closer co-operation with the public health authorities in their effort to curtail the incidence of preventable diseases.

Maternal nursing is probably the most important single factor in preventing disease in infants and children. Plecker's recent study and report reminds us of our duty in popularizing breast feeding. He found that only 52 per cent of all infants of six months of age or under in Virginia are breast fed, with a death rate of 83 in 1,000 for the state. Compared with Chicago, where breast feeding has been increased from 20 to 90 per cent since 1922, with a reduction in death rate of 34 per cent, to now 67 in 1,000, we can expect a marked improvement when our breast feeding is increased to 90 per cent.

Artificial feeding must be used in a certain percentage of cases, and demands a careful study in a paper on this subject. In some cases mixed feeding can be used, and is preferable, as you always have the breast milk to fall back on in case of difficulty in finding a suitable artificial milk. Complemental feeding, when well-balanced formulas are used, gives good results, and carries very little danger. Complete artificial feeding demands the most careful study of the individual cases, and, when this is given, satisfactory results can be expected. It is necessary that the baby be seen frequently, and feeding checked carefully, weight noted, bowels and general development watched closely, and feeding changed gradually to meet the changing requirements of the baby. In using an artificial milk, one should select a well-balanced preparation. Fresh cow's milk is best, and can be modified more readily to meet the requirements of the individual baby than can other preparations. The dry milks are very helpful in certain cases, where good cow's milk is not available. S. M. A., Dryco, Recolac and Klim are perhaps the best of the many preparations on the market. I cannot let this opportunity pass to condemn the use of condensed milk so commonly used in the popular Eagle Brand. I cannot emphasize this better than to quote Marriott, who says, "it is a popular form of food with shiftless parents, and is often prescribed by ignorant physicians; it is probably responsible for more deaths among infants than any other one cause, and the only excuse for giving an infant a food so unsuitable is the utter impossibility of obtaining any other form of milk." We know that it is an unbalanced food, and tends to produce a child of low resistance to infections, and with a predisposition to, if not actually leading to a true condition of rickets. I have never allowed a child under my care to stay on condensed milk, and, although I may be criticized for changing them all, I do it conscientiously, and have always felt that gratifying results were obtained. I am glad to be able to say that the sale of Eagle Brand milk in Bristol is about 90 per cent less than it was only a few years ago.

Time forbids a detailed discussion of feeding principles, but the lactic acid milk, popularized by Marriott, must be mentioned, as its value in difficult cases cannot be over-estimated. Likewise, the protein milks are most helpful, and in many instances life-saving, as in the simple diarrheas and intestinal disturbances it is almost 100 per cent effective.

Cod-liver oil in the pure standardized fresh state should be given in full amounts to every baby, and most of the older children. The mixed preparations, such as Maltine, do not seem to give satisfactory results, as the amount of cod-liver oil is insufficient. Of equal importance is orange juice in good quantities

daily. These are mentioned here, as I feel that they are always a part of feeding.

When good feeding is practiced by all those under whom the care of children come, then malnutrition, with its predisposition towards debilitating and often fatal conditions, will be prevented. The decrease of 20 per cent in the death rate from diarrheas and intestinal conditions, reported by the Metropolitan Life Insurance Co., for 1927, is accredited entirely to the decline for children under two years of age. We could not find a better indication than this as to the progress of infant feeding and hygiene.

Rickets, a condition which dates from the beginning of time, while not a factor in immediate mortality, often carries much disability, besides its predispositon to conditions which often prove fatal. Hence, prevention of this condition is most important, and this can be done by giving attention to properly balanced diet, together with vitamines and plenty of sunshine. Full exposure to sunshine is necessary, and I think this factor accounts for the added benefits often seen from the use of the ultra-violet ray lamps. The latter is specific in its effect and, when used early and in conjunction with proper diet, very gratifying results are obtained. But since this type of treatment is available to so few, we should insist upon every baby and child using that which nature has so graciously provided; then there will be less demand for the substitute.

The value of immunity as protection against certain contagious and infectious diseases is referred to briefly:

1. *Smallpox* marked the beginning of our preventive agents, when Jenner, in 1796, gave us a vaccine which protects us against this dreadful malady. It is well known about by all of us, but, like other common things, is often over-looked in our effort to concentrate on the less common. That the incidence of smallpox is increasing is a sad reflection upon us. The thought of an epidemic this winter in our neighboring county is appalling, and the occurrence of a single case is inexcusable. It is our duty to see that every child is vaccinated in the early months of life. Spalding and Park say that the best time is about the third to the sixth month, and that if this were done, then the chapter on that subject need not be written. The intradermal method of vaccination is recommended by Toomey and Hauver as much more efficient, and to have many advantages over the old method.

2. *Diphtheria*, a condition that we know can be controlled, carried a higher death rate in 1927 than in 1926. A 10 per cent mortality rate in spite of a specific therapeutic serum makes it imperative that prevention be practiced. The value of toxin-antitoxin as an active immunization against diphtheria is well established. We can expect lasting protection in 97 per cent of cases. In Bristol, where approximately only 40 per cent of school children were immunized one year ago, we have noted a decided decrease in the incidence of the disease, there being only twenty cases reported. As we realize that a large incidence is among the pre-school child, we must start back and immunize every child over six months of age. When this is done, we will have rendered a service for which everyone will be grateful. The exception, or particular caution, in giving toxin-antitoxin to potential asthmatics is advised by Waldbott, who concludes that the fractional method of administration is all that is necessary.

3. *Scarlet fever*, though somewhat milder in form, has been very prevalent this Winter, and certainly, with its lasting effects and frequent complications, we can appreciate the need of controlling the incidence of this disease. The value of the immunization toxin as a preventive agent is still somewhat questioned, but I feel that this is because we are not using it sufficiently We are often guilty of trying therapeutic agents, the results of which we are sometimes not so sure; why not do a little expectant preventive practice? The research workers claim results, and it is up to us to try it.

4. *Whooping cough*, which remains responsible for over 3,000 deaths in the birth registration area of the United States annually, still demands study. Certainly the results of vaccine therapy, if a fresh product is used and given early in the illness is very gratifying. It aborts often, lessens severity and prevents likelihood of complications always. It should be used routinely and early in suspected cases.

5. *Typhoid fever*, although infrequent, should not be forgotten, and the older children should certainly receive this protecton before they are permitted to attend camps, or go on trips, especially in case of epidemics.

6. *Measles* remains an unsolved problem so far as a satisfactory preventive agent is con-

cerned; however, a convalescent serum is recommended as an aid in epidemics. Unusual hygienic precautions should be taken to prevent unnecessary exposure of younger children, as we know that in these the mortality is highest. A common idea among a great number of the laity that it is best to allow the child to develop the disease should be suppressed.

7. *Tetanus:* although rather infrequent, its occasional occurrence reminds us that we should make a more general practice of administering tetanus antitoxin.

This study, while brief and incomplete, will, I hope, increase our thoughts and actions in preventive medicine; make us more determined to decrease the dangers associated with pregnancy and child-birth, and stimulate us to make even greater effort toward "keeping well children well". If so, I shall feel well paid for my attempt.

BIBLIOGRAPHY.

1. Studdiford, Wm. E.: The Relation of Obstetrics to Preventive Medicine, *Boston Med. & Surg. Jour.*, 191:615, Oct., 1924.
2. Baker, Josephine: Maternal Mortality in the United States, *J. A. M. A.*, 89:2016, Dec., 1927.
3. Bulletin Metropolitan Life Insurance Co., VIII, Oct., 1927.
4. Baughman, Greer: A Preliminary Report Upon the Midwife Situation in Virginia, *Va. Med. Monthly*, 54:749, Mar., 1928.
5. Royster, L. T.: Report on Child Welfare Clinic, *U. of Va. Extension News*, Dec. 20, 1927.
6. Kerr, J. M. Munro: Preventive Medicine as Applied to Obstetrics, *British Medical Jour.*, 1:977, June, 1926.
7. Kosmak, Geo. W.: Results of Supervised Midwife Practice in Certain European Countries: Can We Draw a Lesson from This for the United States? *J. A. M. A.*, 89:2009, 1927.
8. Sutelan, Harry: The Treatment of Abnormal Obstetrics at the Lying-In-Hospital of New York City, *Va. Med. Monthly*, 54:652, Aug., 1927.
9. Procter, Ivan: A Study of the Pelvis in Relation to Operative Delivery, *Sou. Medicine & Surg.*, 89:536, Aug., 1927.
10. Kelly, Robert P.: The Care and Repair of the Cervix and Perineum in Confinement Cases, *Va. Med. Monthly*, 54:713, Feb., 1928.
11. DeLee, Joseph B.: Principles and Practice of Obstetrics, W. B. Saunders Co., 1925.
12. U. S. Dept. Commerce, Bureau Census, Annual Report Birth, Still-Birth, and Infant Mortality Statistics for Birth Reg. Area U. S., 1925.
13. U. S. Dept. Labor, Children's Bureau, Report Maternal Mortality, 1926.
14. U. S. Dept. Labor, Children's Bureau, Causal Factors in Infant Mortality Pub., 142, 1925.
15. Capon, Norman B.: The Relationship of the Pediatrician to the Obstetrician, *Jour. Obs. & Gyn.*, 34:345, Dec., 1927.
16. Everhart, James K.: The Importance of Closer Obstetric and Pediatric Relation, *Atlanta Med. Jour.*, 26:807, Sept., 1923.
17. Myers, Park L.: Obstetrics and Pediatrics—Their Growing Relations, *Ohio Med. Jour.*, 4: 715, Dec., 1908.
18. Hoag, Ward Bryant: Why Our Obstetricians Should Either Extend their Line of Endeavors, or Confer Earlier with the Pedotrophist, *Amer. Jour. of Obs.*, 65:355, Feb., 1912.
19. Knox, J. H. M.: Prevention in Pediatric Practice, *N. Y. State Med. Jour.*, 25:921, Oct., 1925.
20. Shaw, Henry L. K.: The Pediatrician and Preventive Pediatrics, *N. Y. State Jour. Med.*, 25: 109, Jan., 1925.
21. Carpenter, Howard Childs: The Physician's Opportunity in the Prevention of Diseases in Childhood, *Atlantic Med. Jour.*, 27:275, Feb., 1924.
22. Williams, A. E.: Preventive Medicine in Pediatrics, *Illinois Med. Jour.*, 51:27, Jan., 1927.
23. Plecker, W. A.: The Physician's Part in Popularizing Breast Feeding and Reducing Infant Mortality, *Va. Med. Monthly*, 54:539, Dec., 1927.
24. Sterling, E. Blanche: The Problem of Fetal and Neo-Natal Death, Reprint 1146, Pub. Health Reports, March 18, 1927.
25. Levinsohn, Sandor A.: Rickets in the Negro—Effect of Treatment with Ultra-Violet Rays, *Amer. Jour. Dis. Children*, 34:955, Dec., 1927.
26. Bloomberg, Max W.: The Treatment of Persistent Rickets, *Amer. Jour. Dis. Children*, 34:624, Oct., 1927.
27. Waldbott, Geo. L.: Diphtheria Prophylaxis Among Asthmatic Patients, *J. A. M. A.*, 90:290, Jan., 1928.
28. Toomey, John A., & Hauver, Robert B.: Intra-Dermal Vaccination, *Amer. Jour. Dis. Children*, 35:186, Feb., 1928.
29. McIlwaine, W. B.: Some New Methods of Infant Feeding, *Va. Med. Monthly*, 54:489, Nov., 1927.
30. Urbach, Howard: A Consideration of Summer Diarrhea in Infancy, *Va. Med. Monthly*, 54: 370, Sept., 1927.
31. Huenekens, E. J.: Pertussis, *Minn. Medicine*, 10:601, Oct., 1927.
32. Marriott, W. McKim: The Feeding of Infants, McLester; Nutrition and Diet in Health and Disease, W. B. Saunders Co., 1927.
33. Spalding, Heman: Abt's Pediatrics. W. B. Saunders Co., 1925.
34. Litterer, J. H.: Active Immunization in Scarlet Fever, *Journal Tenn. State Med. Asso.*, 20: 253, Nov., 1927.
35. Hygeia—A. M. A., Abstract, Annual Report of Infant Mortality, American Child Health Association. Sept., 1927.

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THE TREATMENT OF UTERINE TUMORS.

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The treatment of tumors of the uterus depends upon a number of conditions some of which have no direct relation to the tumors themselves. When a tumor of the uterus is diagnosed as such, numerous questions immediately arise and must be answered before any active treatment is instituted. Some of these are the following, i. e., the nature of the

growth, the symptoms to which it gives rise, the general condition of the patient, the age of the patient, the effect of the treatment upon future child bearing, its effect upon the nervous condition of the woman, the difficulties to be encountered in the treatment, the skill of the operator, the experience and judgment of the radiotherapist. Some tumors require no treatment and need only to be watched. Some, like carcinoma, are to be diagnosed early if a cure is to be expected.

Before we go into the specific treatment of the various tumors let us consider certain general principles of treatment. At the present time, the two outstanding methods of treatment of these tumors are surgery and radiotherapy. Let us contrast them. Surgery has stood the test of time and we know quite well what it can accomplish as well as the objections to its use in the treatment of these tumors. In the case of radiotherapy there is quite a different picture. Its accomplishments for good or for evil are not nearly so well defined. There is no reason to think that radium or X-ray has any selective action on the cells of fibroid tumors or carcinomas. Kayserling and others have shown that the action of radium upon normal cells is exactly the same as it is upon carcinoma cells. The difference in its effects upon various tissue depends upon the stability, as it were, of the tissue. Its effects in the treatment of fibroid tumors of the uterus depends chiefly upon its action on the ovary by destroying its function and producing the menopause. Geller showed in rabbits that the so-called stimulation of small doses of radium, etc., for bleeding at the establishment of puberty instead of stimulating the ovary caused degeneration of this organ.

The conclusions of August Martin, some fifteen years ago, in a masterly article reviewing the results of the treatment of uterine carcinoma by the use of radium, mesothorium and X-ray, are logical and still apply, i. e., that there is no proof that any form of radioactivity has any selective action on cancer or any other cells, the only difference being that cancer cells are more easily destroyed than most normal tissue cells; that there is a maximum intensity of radiation by which, when it is just reached, cancer cells are destroyed, connective tissue cells in a measure injured, while the normal epithelium of the uterus is not injured; if this intensity is exceeded, all the normal tissue in the neighborhood is injured or destroyed while cells at a considerable distance may be stimulated to increased growth; that we have never had any clear cut conception as to what dosage is best, how long we must apply the agent, how long the interval should be between applications and what form of application least injures the neighboring tissues.

While their view has to a certain extent been modified and will be more so as our experience grows, the application of radiotherapy is and will probably remain to a large degree empirical. The intensity of the action of X-ray and radium varies inversely as the square of the distance. In trying to reach a deep lying tumor the intermediate tissue is bound to be affected by it, and tumor cells a certain distance from the point of application may possibly be stimulated to more active growth. The intensive action of X-ray and radium applications causes changes in the blood—decrease in the red cells and hemoglobin and a temporary leucocytosis. Warren and Whipple, Yugenberg and others have demonstrated that the mucosa of the small intestine is very suceptible to the action of these agents. Warren and Whipple state: "There can be little doubt that the small intestine can be injured by roentgenray therapy in human beings, and it is certain that such injury is serious." "We know," they say, "that roentgenray skin burns or ulcers are very chronic and we are able to state without reservation that the intestine can be so injured by the roentgenray as to produce ulcers that are no less chronic than the familiar skin lesions."

The vitality of tissues is affected by X-ray and radium, produced probably by injury of the endothelium of the blood vessels and, when preoperative applications of these agents are made, there may be interference with the healing of wounds. We are all familiar with X-ray and radium burns and sloughs. One of my patients who was given intensive X-ray treatment for a large fibroid tumor had at operation the most vascular and extensive adhesions of the intestines and omentum to the tumor; the operation was followed by sloughing of the skin and fat of the abdomen, and she developed a vesicovaginal and rectovaginal fistula. I think it beyond question that these untoward results were due to the intensive X-ray treatment prior to operation. We frequently see marked nausea and diarrhea following radiotherapy, and bloody stools and

death have apparently resulted occasionally from its application over the abdomen.

Bagg and Little (*American Journal of Anatomy*, March, 1924) confirmed the observation of others that healthy mice known for generations to produce healthy offspring, when subjected to irradiation before mating, frequently produced abnormal offspring and that when the offspring of irradiated mice are bred together there may appear abnormalities in subsequent generations which by properly selected breeding may involve all the offspring. Healy says that experimental data upon the lower animals have shown that when the sex glands are sufficiently irradiated before fertilization the following are typical fetal reactions: (1) disturbed, abnormal, arrested development resulting in the formation of monsters, etc.; (2) a marked tendency to a progressive loss of fertility, and (3) a specific modification of hereditary mechanism and the production of inherited defects in the young, especially in the eyes. Irradiation during pregnancy produces disturbed, arrested, abnormal development with death of the embryos, absorption or abortion, stunting in growth, cataract, sterility, lesions of the central nervous system and blood vascular disturbances in the embryos.

A number of cases in human beings have been reported showing that similar results can be expected with them. An editorial in the *Journal of the American Medical Association* says, "It would seem on the basis of existing returns that the actual danger of developmental defects from irradiation of child bearing women is not so great as to constitute a contraindication for this form of therapy for conditions in which it is seriously needed, but the potential danger is real enough to discourage irradiation when the indications for its use are not urgent or when the prospects of actual benefit are at all doubtful."

Case and Warthin have noticed changes in the liver indicating that general applications of radiotherapy, especially those over the abdomen, are apt to result in serious liver damage. It is entirely probable, they say, that post-irradiation sickness is as much due to hepatic as to intestinal damage. They continue: "There is an additional general sensitiveness of some patients to radiation. Cachetic persons bear it badly, but in addition there are some persons who bear it badly although they have not developed cachexia."

Thus we see some of the dangers of the use of radiotherapy. While it may be claimed that these effects can be minimized by proper precautions, it must be apparent that we are dealing with agents whose powers for evil are not fully known and whose potential dangers are such that we must give them our earnest consideration before they are employed.

Another consideration of great importance is that radiotherapists are not always competent gynecological diagnosticians. Even experts make mistakes, but they should not be serious ones. Pregnancy may be mistaken for a fibroid tumor, extrauterine pregnancy for the same; white pus tubes, tumors and abscesses of the ovary, cancer of the sigmoid or rectum have all been mistaken and treated for fibroids. When an operation is done, the results of mistakes are not so serious, for the true condition is discovered as soon as the abdomen is opened and before valuable time has been lost or any great harm has been done. Accurate diagnosis is a prerequisite for the employment of radiotherapy. I believe that at the present day there are definite indications for the use of radiotherapy in the treatment of uterine tumors, but I also believe the tendency is to employ it indiscriminately and without logical indications. In some cases it is used to destroy cells when the destruction is desired. In others it is used to stimulate the growth of tissue. It should, like other therapeutic measures, have all possible tests before it is advocated as a cure for disease. We hear of its favorable action on inflammatory processes, while others believe, with more reason, that it lowers the vitality of tissue and favors bacterial invasion. Let us then regard it as we would any other therapeutic agent in a rational manner and not think it has some magical property of killing cells in one case and stimulating cells in another without definite knowledge as to amount of application which will effect these results.

Some of the objections to surgery are the mortality and morbidity of operations. The morbidities are the ill-effects produced by adhesions, the occurrence of post-operative hernia, and the dread of the operation. The mortality of operation in uncomplicated cases of fibroid tumor operation is practically nothing when the operator is competent. Clark and Bock in 267 cases of fibroid tumor operations had a mortality of .7 of 1 per cent and in 169 uncomplicated cases the mortality was

nil. These figures correspond very closely to those of other skillful gynecologists. The mortality in cancer cases is of course higher and we will touch upon that later. The morbidity of operations, like vomiting, cystitis, adhesions, hernia, etc., can be largely avoided by care in technique, skillful anaesthetization and good post-operative care. The dread of an operation is one of the most potent factors in causing women to have radiotherapy rather than surgery. It unconsciously influences the advice given by the medical attendant.

The tumors of the uterus which are of prime importance are fibro-myomas and carcinomas. There are several others such as sarcomas, mucous polyps, chorio-epitheliomas and hydatidiform moles. The accepted mode of treatment of chorio-epitheliomas, of mucous polyps and of hydatidiform moles is the enucleation of these tumors. In sarcomas the treatment is the same as in carcinomas so that the uterine tumors about which there is real divergence of opinion as to their treatment are fibroids and cancer.

With our preliminary remark in mind let us see which cases of fibroid tumors should be treated by surgery and which by radiotherapy. The cases to be treated surgically are large tumors, cases where a myomectomy can be done, especially in pedunculated tumors, tumors in comparatively young women, submucous tumors, tumors complicated with other pelvic conditions requiring operation, rapidly growing tumors, tumors giving rise to pelvic pain, the presence of a marked secondary anemia not accounted for by uterine bleeding, and myomas in very nervous women. The cases in which radium or X-ray therapy is indicated are those women near the menopause who have profuse periods, where there are either no tumors present or where they are small, and where it has been demonstrated by curettage that carcinoma of body of the uterus is not present. In borderline cases the presence of a serious lesion of the heart, lungs, kidneys, or a very pronounced anemia may decide in favor of radiotherapy. There are, however, very few cases of heart disease where operation is contraindicated. The heart condition usually is markedly benefited by the removal of the tumor if it is of considerable size. Almost the same may be said regarding anemias. Most cases require operation and it is seldom that an anemia is so pronounced that an operation is contraindicated. I have operated upon patients with a hemoglobin of 20 per cent or less and have had no bad results. Indeed, at times when a woman is flowing freely the operation, if an easy one, is the quickest and best way to stop the flow. I no longer regard a moderate anemia as a contraindication to operation. Transfusion is very valuable in these cases.

In large tumors the menopause does not usually cause so great a shrinkage of the growth as to make us hope for amelioration of many of the symptoms produced by the tumor, such as a pressure on the ureters, bladder, intestines, blood vessels, the increased work thrown upon the heart, and the inconvenience caused by the size and weight of the tumor. The induction of the menopause may cause a certain amount of decrease in size of large growths, but it is too uncertain to be depended upon. In the early days of gynecology when operators were afraid to attempt the enucleation of these large tumors they practiced the removal of the ovaries, hoping thus to reduce their size. This practice has practically been abandoned. These large growths are prone to undergo degenerations, at times, malignant. They sometimes become infected and frequently cause omental and intestinal adhesions. Some think they cause degeneration of the heart muscle. Therefore, the removal of these tumors is strongly indicated.

In cases where a myomectomy can be done in comparatively young women it gives them a continuance of menstrual life and a hope of child bearing. Two years ago I delivered three young women upon whom I had done a myomectomy not in any case more than two years prior to the delivery. One was sterile and promptly conceived after the operation; one had a small fibroid in a previous pregnancy which grew to be a large one in a few years. The third woman had a myomectomy done during a pregnancy. She miscarried, but was delivered of a healthy child some eighteen months later. It seems to me that it is evident that in the young women a myomectomy or the removal of a portion or the whole of the body of the uterus is preferable to the sterilization of the woman with X-ray or radium. At times a portion of the uterine body, which allows menstruation, can be left. Even where the whole of the body of the uterus is removed, the retention of the ovaries prevents the advent of the premature menopause with its disagreeable symptoms.

In submucous fibroid tumors it can be readily understood that the tumors are prone to undergo degeneration, infection, necrosis, etc. I have seen a few cases of complete inversion of the uterus caused by a submucous tumor. Radium or X-ray tends to increase the danger of necrosis. The consensus of opinion of all writers is that these tumors should be removed.

It is self-evident that, where one finds these tumors along with some other pelvic condition requiring a laparotomy, radiotherapy cannot be considered. It might be noted here that quite frequently in doing a laparotomy for a fibroid tumor, one discovers a tumor of the ovary or some other abnormality of the pelvic or abdominal viscera requiring operation. In a considerable number of cases where a hysterectomy has been done for a fibroid tumor, upon opening the cavity of the uterus, one discovers a carcinoma of the body. In rapidly growing tumors the suggestion is sarcomatous degeneration, hemorrhage, necrosis, etc. Tumors which give rise to pelvic pain are often associated with chronic inflammation of the adnexa, or adhesions, and it is advisable to remove such growths. According to Clark and Keene, a marked secondary anemia, not caused by hemorrhage, is suggestive of degeneration of the tumor and should be treated by removal of the growths.

In women nearing the menopause, with small tumors where a curettage does not remedy the condition and does not reveal a carcinoma, radiotherapy is indicated. The strongest indication for its use is in those patients with adenomyoma involving the rectovaginal septum where a removal of the growth is attended with great danger; the production of the menopause by X-ray, radium, or operation (the removal or destruction of the ovaries) will as a rule cause a cessation of the symptoms. I have had a case where X-ray applications gave apparently permanent relief. Where there are large tumors of the uterus or tumors of the ovaries accompanying the growth in the septum, operation is indicated.

My opinion then is that, in fibroid tumors of the uterus, surgery is the choice in the great majority of the cases. Where radiotherapy is used, the diagnosis of the condition should be made by a competent gynecologist. Many women who have these tumors require no treatment. They should be under observation, however, and, should there be evidence that the tumor is causing symptoms, its removal is indicated. Since the mortality from operation is so small and the chances of trouble being caused by the tumors considerable, the tendency, on my part, is toward the enucleation of the tumor before it reaches a large size or causes pronounced symptoms.

Much discussion has taken place among gynecologists as to what operation should be done in these cases. Briefly, I believe that, unless there is some condition of the cervix which would warrant its removal, the amputation of the uterus above the internal os is to be preferred to a complete hysterectomy. It can be done in one-half to two-thirds the time required to do the latter operation, there is much less hemorrhage and shock and a lower mortality. In women who have not passed the menopause, as a rule, at least one ovary is to be preserved unless both are evidently diseased. At times one can leave a portion of the uterine body so that the menstrual life of the woman is preserved. Where one tumor is found or even where two or three discrete tumors are present and can be removed without too much mutilation, myomectomy is preferable to hysterectomy if the woman is in the child bearing age and there is no good reason for sterilizing her.

The technique of the operations I will not touch upon, but certain general principles should apply in all cases. Some which I keep in mind are: (1) Do not operate without definite indications; remember operations are makeshifts; (2) Do the quickest, easiest operation which will relieve the patient; (3) Do as little trauma to tissue, especially the peritoneum, as possible; (4) Do not, unless it is urgent, do any more than the operation for the growth. If the appendix is frankly diseased remove it, if the condition of the patient justifies prolonging the operation, but do not remove the appendix simply because the abdomen is open. If gall-bladder disease or other condition is discovered requiring major surgical procedure, it is better to wait and remedy them at another time, rather than seriously jeopardizing the life of your patient by attempting to do too much at one time. When an appendix is removed, the operation is no longer a clean one and may be followed by an infected wound with its sequelae of prolonged convalescence, lowering of the vitality of the patient, the tendency to hernia, intesti-

nal adhesions, etc. Avoid trauma to the bladder, ureter, intestines, etc.

In cancer of the uterus there is a wide divergence of opinion as to the treatment. The success of any treatment depends mainly upon a correct diagnosis while the malignant process is confined to the uterus. In order to recognize this early stage of the disease one must investigate any prolonged or abnormal bleeding or blood stained vaginal discharge. Curettage, or the removal of a small piece of the suspicious tissue from the cervix and its examination by a competent pathologist, will usually show whether or not we are dealing with a malignant growth. In my opinion it is better in a doubtful case to give the pathologist a few days to enable him to properly harden and stain his specimen than to depend upon frozen sections. I would say a word here about the so-called precancerous stage. Many unnecessary hysterectomies have been done and a number of lives sacrificed because the gynecologist had the mistaken idea that to excise a piece of a suspicious looking cervix or to curette a carcinoma of the body had a marked tendency to cause an extension of the malignant growth. There are certain characteristics about the gross appearance of cancer that to the experienced are almost diagnostic. In these cases a frozen section is helpful. But in the border-line cases it is necessary to have a thin section and a well defined picture to make a diagnosis. Having determined that we are dealing with a cancer of the uterus, the treatment to be given will depend upon a number of conditions—namely, whether the cancer is of the body or the cervix, whether or not it is probably confined to the uterus, the general condition of the patient, whether the services of an experienced operator or radiologist can be had. How can we tell whether or not the cancer is confined to the uterus? It is impossible to be certain, but the experienced gynecologist can by his examination usually tell whether or not the case is hopeful of cure.

In cancer of the cervix the cases which can be regarded as hopeful of cure are: (1) those where the cancer involves only a portion of the cervix (the early cases); (2) those where the greater proportion of the cervix is involved, but where there is no evident extension of the parametrium. This can be told by vaginal and rectal examination. If the mobility of the uterus is not restricted and there is no mass of tissue extending from the cervix to the pelvic wall, one can regard the case as hopeful of cure. In some cases a cystoscopic examination is useful in telling whether or not the bladder has been invaded by the new growth.

Sometimes one finds a cauliflower-like carcinoma almost entirely filling the vagina attached by a pedicle to the cervix and still the cancer has not extended to the tissues outside the uterus. These are hopeful cases. Where the ulceration or induration has extended well onto the vaginal walls or the uterus is more or less restricted in its movements by an induration extending from the cervix to the parametrium, it is impossible to remove all the cancerous tissue by operation and the cases are called inoperable.

In cancer of the body of the uterus it is usually impossible to tell whether the disease can be cured or not until the abdomen is opened. These cases, however, give a very good prognosis if taken fairly early. The extension is slow, the parametrium as a rule is not invaded and hence the more difficult and dangerous Wertheim operation is as a rule not necessary. The complete hysterectomy going well out beyond the cervix and removal of the tubes and ovaries will cure at least 75 per cent of the cases unless the condition has been neglected; any prolonged uterine bleeding should be investigated especially if the woman is near the menopause.

The treatment in early cases of cancer of the cervix is the Wertheim operation or a modification of it. This consists in the removal of the uterus, tubes and ovaries and as much of the parametrium and vagina as is feasible. Any palpable pelvic glands are also removed. The operation is fairly difficult and long. The immediate mortality is variously given, usually about 10 per cent. In my 25 to 30 cases I have had no deaths. The percentage of cures of cases operated upon vary considerably—Wertheim 42.5 per cent, Peterson 47.3 per cent, Cobb 57.1 per cent and Graves 34.1 per cent. These statistics represent the cures of early and border-line cases. The percentage of cures and the immediate mortality will depend to a certain extent upon the nature of the case, as for instance, the operator who selects only early cases will have a larger percentage of cures than one who attempts to perform the operation in doubtful cases. In the same way, the gynecologist who

operates upon women markedly depleted by hemorrhage and infection will lose more of his cases than one who is more conservative. There is a considerable morbidity which follows the Wertheim operation—cystitis, fistulae, etc. These can largely be avoided by care in operating and good post-operative care. In the early and border-line cases operation should be replaced by radium treatment when there is some complicating disease which would render the operation too dangerous, or where the patient refuses to be operated upon. In advanced cases radium is usually recommended. It, at times, lengthens the life of the patient and makes her more comfortable.

The radium treatment is not free from morbidity. Ulceration of the bladder and rectum occur at times. In one of my early cases which was cured by radium there was an ulcer of the rectum which gave a great deal of discomfort for several weeks. Some inoperable cases which I have referred to the radiologists have been made miserable by bladder symptoms and their deaths hastened by the treatment. A certain number of gynecologists are giving up operations for cancer of the cervix and using radiotherapy only. Burnam and Neill of the Kelly clinic in Baltimore, who have perhaps had a greater experience in radium treatment of these cases than any one in this country, now believe that in early cases of cancer of both cervix and body of the uterus hysterectomy should be done unless there is some strong contra-indication. In border-line cases they advise hysterectomy when possible, the operation in both early and border-line cases to be preceded by radiation in cancer of the cervix and followed by it in cancer of the body. In inoperable cases they advise radium.

Lastly, a few words about the use of radiotherapy. The person using it should have the training, etc., that should be required of any one doing special work. One can conceive of the same difference in results obtained by an experienced user of radium and X-ray and one who is relatively inexperienced, as we see in the results of an experienced operator and a tyro. Another question has repeatedly arisen with me as to what advice we should give women who have inoperable and advanced cancer of the uterus. Where there is no marked bleeding and no foul discharge, is there any justification in advising these patients to have radium treatment or curettage and cautery simply because they have cancer? Is it not better to tell them frankly that there is no hope of cure than to conceal the truth and delude them by a false hope, to go to an expense which many of them can ill afford, to have treatments which will probably do them no good and at times hastens their deaths?

1730 *K Street, Northwest.*

THE HUMAN SIDE OF THE PRACTICE OF MEDICINE.*

By RUSSELL L. CECIL, M. D., L.L.D., New York, N. Y.

Mr. President, Students of the Graduating Class, Ladies and Gentlemen:

The subject which I have chosen for my address is not a new one; it is a topic frequently discussed by medical men, and one which, it seems to me, may prove of interest to the layman as well. For every human being is, I take it, interested in his health. Without health, there can be no happiness and we all want happiness. For this reason, thoughtful people are interested in medicine and in physicians. Educators often remark how comparatively easy it is to obtain large endowments for hospitals and medical schools, a fact which again reflects the sympathy and interest which the public feels toward medical institutions and medical research.

The practice of medicine is one of the oldest of the professions. In primitive times the priest and the physician were one and treatment of the sick consisted chiefly in the use of mystic charms and incantations. Even today, over large regions of the earth, magic and mysticism make up the greater part of medical practice, and the priest or medicine-man makes use of drugs which for the most part, rest on a very flimsy therapeutic basis.

As man has become more civilized, reason has replaced superstition, and as he has searched deeper and deeper into the secrets of nature, he has come to have a much clearer idea of the processes of disease and of the methods of controlling it. To the layman there is still something mysterious about sickness, something outside his ken; but to the physician, the general principles of disease and its treatment are now fairly clear, and are becoming more so with each passing year. The greatest progress has come during the past century through the introduction of the so-called experimental method, the method of "trial and

*Address delivered by invitation before the graduating class of the Medical College of Virginia at its commencement exercises, May 29, 1928.

error." The modern era in medicine is known as the scientific era. It has been through the application of scientific principles, the same principles which have given us modern physics, chemistry and astronomy, that modern medicine has attained to the proud position it holds today.

Medicine then has joined the sisterhood of sciences, and should no longer be looked upon as the stepchild of anatomy, physiology and pathology. Medicine may be defined as that branch of science which has to do with the manifestations and treatment of pathological processes in the human body. But medicine arose, as Osler says, out of the primal sympathy of man with man, out of the desire to help those in sorrow, need and sickness. "The instinct of self-preservation, the longing to relieve a loved one, and, above all, the maternal passion gradually softened the hard race of man." Medicine, then, differs from other sciences in that its practice demands emotional as well as intellectual endowments. The practice of medicine has to do with life and death. It deals with the human being when he is sick and in distress. The quality of sympathy is therefore indispensable to its successful practice.

Twenty-eight years have passed since I was a medical student in this institution. During these years many changes have occurred in our methods of teaching and of practicing medicine. Particularly in respect to teaching the changes have been most marked, most of the schools shifting from the system of lectures and quizes to laboratory and bedside demonstrations. In the olden day it was not unusual for the student to sit in the same lecture room for three or four hours, while one professor after another droned through a lecture or clinic. Such a procedure was more conducive to slumber than to a practical working knowledge of medicine. Now-a-days, the system is very different. Lectures are being reduced to a minimum, and the student spends the greater part of his time in the laboratory and in the wards.

Just as the methods for teaching medicine have changed, so the practice of medicine has been revolutionized. The late Vice-President Marshall, in his Memoirs, has described vividly the life of a country doctor fifty years ago. At that time a physician's information concerning his patients was derived almost entirely from the history and physical examination. There were no instruments or laboratories. Today, even the country practitioner has his sphygmomanometer, his clinical laboratory and X-ray plant, to say nothing of accurately standardized drugs and numerous specific agents. We are graduating from the school of empiricism and striving forward toward the goal of exact science. Indeed, the science of medicine is so absorbing and so full of interesting problems that today the question is being frequently asked, "Are physicians becoming so absorbed in the science of medicine that they have forgotten the patient?" Medicine can never be dissociated from its human aspects, and there is a real danger that this preoccupation in theoretical and laboratory problems may lead to actual neglect of the patient himself. Medicine will probably never be as exact as some other branches of science, because it deals with the human subject, a fact which precludes in some measure at least, the use of the experimental method. Man can never be treated as the physiologist treats the guinea-pig. Certainly, for a long time to come there will be a place in medicine for empiricism. We might divide physicians, like clergymen, into two groups, the fundamentalists who are strong on dogma and distrust science, and the modernists who fear dogma and urge a more rationalistic attitude toward the practice of medicine. The modernists, of course, have the stronger side of the argument so far as medicine is concerned, but even the most modern of physicians is not justified in withholding a drug from a patient because he has no scientific proof of its efficacy. An element of faith or belief is still essential if medicine is to be practiced in a humane and sympathetic spirit.

The human side of medicine is that side which has to do with the patient as distinguished from his disease. In a broader sense, of course, it might include the humanitarian and altruistic side of practice as distinguished from purely scientific practice. Before we can have diseases to study and treat, we must have patients to contract the diseases. As Draper has remarked, in our modern eagness to study the disease we sometimes approach the patient as though his ailment were a little bundle strapped to his back, which we could remove by simply cutting the string. Occasionally, this may actually be the case, but too often the disease has become such an intimate part of the patient's whole make-up that such differentia-

tion is impossible. When we seek a reason for this tendency on the part of the present day practitioner, we must go back to the medical school. During the first two years the student is in the laboratory and comes into little or no contact with patients. During the last two years, the absorbing problems of diagnosis and treatment again distract his attention from the patient, who, in most cases is from the lower ranks of society, and by his very lack of personality makes it easy for the student to overlook him altogether, or at least, to forget that he is a fellow human being. In this way wrong habits are easily formed, which will be difficult to break in later years. Ignoring the ethical side of the question, the study of the human factor in disease is just as important as the study of the pathological factor. This is true even for attaining an accurate diagnosis. It is still more important in the successful handling and treatment of a case.

In studying the patient, as distinguished from his disease, we must take note of several factors. First, anthropological data. Anthropologists and physicians are both interested in attempts to correlate physical measurements with the individual's temperament, habits and tendencies toward various diseases.

Stockhart and others have written at length about dolicocephalics and brachycephalics, the long heads and the round heads, and the various characteristics of each group. No doubt, these groups have different susceptibilities both in respect to infections and to the organic diseases.

Endocrinology is, of course, closely bound up with this question and within the next few years we will certainly learn a great deal more about the relation of the endocrines to physical markings and temperamental traits.

In studying the patient, psychological observations are just as important as anthropological data. The general behavior of the patient under various conditions is worthy of careful study. Is he phlegmatic or emotional? Is he governed by reason or by feeling?

Psychoanalysis is having a great vogue these days and may be said to have reached the proportions of a fad. In the hands of the proper person, however, it may throw valuable light on a case, and will undoubtedly take a permanent place in the practice of modern medicine.

The anthropologists have classified humanity anatomically, and now the psychologists are attempting to develop a psychological classification. Last summer it was my privilege to meet a young psychologist who was very much interested in this problem, and had done a considerable amount of research in the field. He divides us all into obsessives and hysterics.—Obsessives of course being the melancholic, introspective type and the Hysterics those who are more visibly emotional.

It is only by thorough understanding of the patient's psyche that a sympathetic bond can be established between him and the physician. This is particularly true in the case of hypersensitive individuals to whom the physician is a sort of father confessor.

Finally, there are environmental factors which the skillful physician must take into consideration. The economic status is always of interest as it has such an important bearing on the patient's method of living as well as on the character of treatment which the physician may prescribe. The relations of the patient to his job and to his family have much significance and the handling of the family often affords the physician more difficulty than the handling of the patient himself.

Under the Human Side of Medicine might also be included the humanitarian or altruistic side. It would be extremely interesting to know the controlling motive which actuated you all in your final decision to study medicine.

Many, no doubt, were influenced by heredity, by the fact that a father or uncle were practitioners; others, perhaps, have looked upon medicine as the means toward a lucrative income, but I am sure that a great majority of you were influenced chiefly by a very genuine idealism which expressed itself in a zealous desire to lead a life of service in preference to one of pure self-interest.

A certain amount of idealism is essential not only to the medical student but to the practicing physician. It is a common observation that the men who make the greatest success in practice are those who have a real interest and fondness for humanity—not humanity in the abstract so much as for individual human beings. If you don't like people, don't try to practice medicine.

The doctor who would understand his patient must himself be human. What a splendid illustration we have of this in William Osler. Those of you who have read his life by

Cushing will recall how on one page he is discussing some profound medical topic, while on the next we find him exchanging jokes with some friend. In one letter he writes in reference to a recent call, "I wonder what I would have turned to if I had accepted the professorship at Edinborough—whiskey or John Knox?"

The greatest study of mankind is man, and the chief occupation of a physician will always be to heal the sick patient. No matter what the circumstances, the patient's interests come first. Clinical investigations of all kinds are of course highly commendable, so long as they do not jeopardize the well-being of the patient.

In Bellevue Hospital we have sometimes been criticised for giving anti-pneumococcus serum to alternate cases of pneumonia. But here the whole object of administering serum is to find out whether it possesses therapeutic value. I quite agree that the moment its value is firmly established, it would be unfair to withhold it from every other patient.

One of the most important trends in modern medicine is the development of specialism. With the rapid increase of knowledge and the growing complexities of present day practice, the arrival of the specialist was inevitable; and in spite of certain inherent weaknesses, the new system has contributed much to a greater efficiency in the diagnosis and treatment of disease. But the specialist, like the scientist, tends to be impersonal. The specialist sees many of his patients only once or twice, and finds little occasion to become acquainted with their private life or personal peculiarities. Of you who graduate today, some will practice medicine, some surgery, some obstetrics, etc. Many of you will confine your entire attention to dentistry, now recognized as one of the most important branches of medicine. You who graduate in pharmacy will be custodians of the newer pharmacology which offers greater and greater hopes of our mastery of disease. And you who nurse the sick patient will bring to your task a skill and training hardly dreamed of by the founders of your profession. Yet, in spite of this division of labor, we are all brothers in the same noble calling—the care of the sick. If we are to achieve the goal, we must have something more than accurate knowledge and skillful hands. He who serves well his fellow man must have the spirit of service. Sympathy, kindliness, helpfulness, these are the watch-words of the good physician. Practice medicine with your heart as well as with your head, not merely because it leads to success, but because by so doing you will live up to the noblest traditions of your profession.

The pleasure which I always feel in being in Richmond is greatly enhanced on this occasion by the fact that I am here under the aegis of my Alma Mater. Perhaps adopted Alma Mater would be more accurate, but can we not omit the "adopted" now, and allow the sons of University College to claim the Medical College of Virginia for their own Mother? When these two great colleges were consolidated, there was created an even greater college,—one destined to rank high in the field of medical education; and as such we are proud to claim kinship with her today.

33 *East Sixty-first Street.*

INTERMITTENT VESICO-VAGINAL FISTULA—WITH REPORT OF A CASE.*

By C. J. ANDREWS, M. D., F. A. C. S., Norfolk, Va.

The case which I shall report has some features which, so far as I know, have not previously been described.

Case Report

Mrs. M. C. was first seen at my office November 8, 1926. She gave the following history: Age 23, married 2½ years, one child, age 7 months, delivered by forceps after sixty hours' labor. About twenty-four hours after labor, loss of control of urine was noticed. This condition improved for a time. Several weeks after labor there was control while patient was lying on back, but dribbling during the day while patient was on her feet. Two months after delivery she was treated for about two weeks in an excellent hospital in another city. The true nature of the trouble was evidently not determined, as she was told that it would continue to improve.

Examination showed a young woman in apparently rather a poor state of health. There was severe relaxation of perineum, small cystocele and extensive bilateral laceration of cervix with erosion. The pelvis was otherwise normal. No leakage of urine could be seen by inspection of vesicovaginal septum. Cystoscopic examination showed slight redness around left ureter; right ureteral opening

normal in appearance. Trigone slightly congested. Bladder sphincter closed normally over endescope as it was withdrawn. Posterior urethra was congested. Bladder capacity 300 c.c. Bladder urine chemically and microscopically negative. Indigo carmine injected into vein discharged promptly and normally from both ureters without any dye appearing in the vagina. The history and symptoms strongly suggested deficient sphincter control, as I had never known of any vesico-vaginal fistula which leaked only when the patient was standing or sitting. The evidence of sphincter control on distending bladder and also by direct observation through endoscope, seemed to contradict this. The bladder was then catheterized and the indigo carmine allowed to accumulate in the bladder. With bivalve speculum inserted and opened with the blades to the side, and by waiting patiently, a very small trickle was finally seen about midway between urinary meatus and the cervix. A small probe was then passed through the fistula into the bladder, following a slanting course which, probably together with the small calibre, explained its intermittent character.

Operation: As the fistula was small, it seemed proper to attempt to save the patient another anesthetic by repairing the injury to the cervix and perineum at the same time as repair of fistula. The fistula was exposed and dissected out, and the bladder and vaginal strictures sutured separately and at right angles. The retention catheter was used and worked very satisfactorily. Unfortunately, about four days after the operation one of the sutures in the cervix was evidently absorbed, and a severe hemorrhage from the cervix occurred, requiring packing against cervix. This controlled the hemorrhage. On the sixth day I removed the catheter. The patient then had retention and required catheterization for several days. The repair of the perineum probably contributed to this. However, there was no leakage and the patient was discharged in due time in good condition.

After six weeks the patient reported for discharge examination. Her condition was excellent. She had improved greatly in health and morale. There was no leakage or other bladder symptoms. About a week later, or nearly two months after the original operation, and after resumption of conjugal relations, a slight leakage was again noticed. During the following six months no leakage would be seen for two or three weeks at a time. This would alternate with a period of leaking, but always only when on feet. I tested her a number of times but could detect no leakage. I was about to conclude that it was the sphincter this time when a final test by injection of mercurochrome showed a small leak at posterior angle of previous incision.

Second Operation: Ethylene anesthesia was used. An incision was made from a point near meatus to cervix connection with transverse incision in front of cervix. The dissection was carried out after the usual method for repair of cystocele, separating bladder from vagina and cervix and exposing cervicopubic fascia. The fistula and scar tissue was removed, and the bladder opening sutured by two rows of fine catgut. The fascia was then brought together and sutures placed after the method used by Fothergil for repair of cystocele. A retention catheter was used for five days. There was very little post-operative discomfort, and, unlike the previous operation, there were no unfortunate occurrences. There has been no further leakage and patient's condition has been excellent.

Although vesico-vaginal fistula, at least following labor, has become very rare, literature continues to record cases operated many times before cured, and some not at all. It would also appear that some of these have been small ones.

It is interesting to note that Hayward, who in 1839 first successfully repaired a vesico-vaginal fistula, called attention to the necessity of widely separating the bladder and vagina. Mettauer, in 1847, used lead sutures, and during a period of four years is said to have repaired many without a single failure. Sims' celebrated case was cured in 1852, after four years of repeated effort. His contribution seems to have been the method of exposure (Sims' position), silver wire and retention catheter. Kelly,[1] 1914, described a method of dissection somewhat as I used in this case. In extensive cases he opened the peritoneum in the utero-vesical space in order to better mobilize the bladder. Watkins,[2] 1925, described a very similar dissection, and called attention to the necessity of wide separation of any contracting bands, particularly when the sphincter was involved.

Spaulding,[3] 1923, reports previous methods of wide dissection, and calls particular attention to the advantage of separate dissection of fascia and separate suturing between vaginal and bladder walls. Trendelenberg, Marcy and Hirst recommend transperitoneal abdominal route in some cases of high fistula. Young has recently reported a case of a small fistula, previously operated eleven times, as cured by operating through the bladder.

Sturmdorf[4] and Hunner[5] advise against the retention catheter. Chute,[6] 1920, suggested the use of the prone position for a week or more after operation. He believes this to be an important and useful measure. It has since been used by Mayo, Young and others with satisfaction.

Vesico-vaginal fistula at the present time seems to be more common following operation than labor. E. S. Judd, of the Mayo Clinic[7] reports 61% of these cases to follow operation. Sampson, 1904, reported nineteen vesico-vaginal fistulas following 158 hysterectomies at Johns Hopkins Hospital. The records of the Norfolk Protestant from 1922 to the present time show one case due to operation, and one, my case, due to labor. During this period four cases due to operation and two due to labor have been treated at St. Vincent's Hospital. The results have been, one cured after four operations, one after two, and one after one operation; one died, two are recorded as being improved.

There are undoubtedly some extensive injuries which cannot be successfully repaired by any method. The loss of bladder sphincter in some cases has rendered repair useless. For these patients it is possible to close the urethra and vaginal opening after opening recto-vaginal septum, substituting rectal sphincter for bladder.

R. E. Hoffman[8] reports a case which has been reasonably satisfactory during a period of nine years. Probably a better precedure is transplanting of the ureters after the method of Franklin Martin and Coffey. Two cases have recently been reported by Rubin Peterson which have been successful and given great relief. He used technique slightly different from the other, and treated one ureter at one operation and the other after six weeks' interval.

The diagnosis of this condition is usually obviously easy, but, as shown in my case, the symptoms and examination may both be misleading. The exact point of the leakage may be difficult to locate, particularly as to whether it comes from urethra or fistula. The cystoscopic examination should be made in all cases, as by this means the location of the ureteral openings may be located and the operation planned in such manner as to avoid them. Cullen suggests splitting the ureter in the bladder wall to give more room where the opening is on or near the edge of the fistula. The ureter lies in bladder wall for about one-half inch at this point. The leak may be directly from the ureter and in this case colored fluid injected into bladder will not appear in vagina. Some operators have used milk for injecting the bladder, as this does not stain the tissues. In my case, a small calibre fistula, mercurochrome passed through when other dyes did not. I do not know whether this was due to its being more fluid or to the fact that the fistula was unobstructed at that time.

The use of forceps has seldom been the direct cause of vesico-vaginal fistula, and probably has prevented many by decreasing time of pressure of presenting part on bladder. Sims called attention to this fact. Every measure which pertains to better and more scientific obstetrics would tend to prevent accidents of this kind, particularly the prenatal care which involves measurements of the pelvis and choice of suitable method of delivery in individual cases.

Spaulding says a study of the literature on operative cure for vesico-vaginal fistula dating from the time of Sims, reveals the fact that success has followed only in those cases where the operation has taken into consideration the proper denudation and approximation of the fascia layer lying between bladder and vagina. The older operation described by Sims unconsciously obtained this result by wide denudation of the fistulous tract and placing sutures through the vaginal mucosa and fascia layer so as to relieve the bladder mucosa of all tension. The modern operation consists in dissecting the vagina and fascia free from the bladder and closing each structure separately.

I wish to acknowledge indebtedness to Dr. Lomax Gwathmey, who rendered valuable

counsel and assistance in the treatment of this case.

BIBLIOGRAPHY.

1. Howard A. Kelly: Tr. Southern Surgical Assn., 1914.
2. Thos. J. Watkins: *S. G. & O.*, July, 1925.
3. Alfred Baker Spaulding: *Western Medical Times*, April, 1923.
4. Arnold Sturmdorf: *S. G. & O.*, Sept., 1925.
5. Guy L. Hunner: Tr. Southern Surgical Assn, 1914.
6. A. L. Chute: *Journal of Urology*. July, 1921.
7. E. S. Judd: *S. G. & O.*, May, 1920.
8. R. E. Hoffman: *Clinical Medicine & Surgery*, March, 1927.

305 *Medical Arts Building.*

THE TREATMENT OF GOITRE.*

By ALEXIUS McGLANNAN, M. D., Baltimore, Md.

It is with some diffidence that I address this audience on the subject of goitre. Compared with that of many members of this Section of the College, our experience is small, and it is much too small to be compared with that of the Western Clinics. The diffidence would be embarrassment in the presence of our distinguished visitors were it not that I can take this occasion to acknowledge my debt to Doctor Mayo and to Doctor Crile for the instruction so freely given when I visited Rochester and Cleveland in search of knowledge with which to improve my treatment of goitre. However, our experiences have been varied and interesting. We have had cases of sarcoma, of diffuse carcinoma as well as cancer developed in an encapsulated adenoma, benign adenoma, colloid, hemorrhagic and fetal. Cysts with many variations, luetic thyroiditis, adenoma and carcinoma in lateral aberrent thyroid, as well as simple and toxic goitres. The patients have come from a relatively narrow geographical area, and in most cases the relation of the patient and surgeon has been so intimate that the impression of our difficulties is distinct and the memory of our disasters persistent. A steady increase of the admission rate for goitre at the Mercy Hospital has added to our interest in the subject.

To keep this paper within reasonable limits, I shall omit any detailed consideration of simple goitres and the hypertrophies of adolescence and pregnancy. In the former, the problem largely is one of operative technique and judicious determination of the amount of gland to be removed. The latter is almost entirely within the province of the internist rather than the surgeon.

Thyroiditis bridges the gap between internist and the surgeon. The chronic interstitial and parenchymatous varieties seldom need surgical treatment. Luetic and tuberculous thyroiditis may come to operation for the relief of pressure symptoms or as a result of confusion in diagnosis. Suppurative lesions require operation.

Tumors of the thyroid require operation for their cure. Sarcoma is usually fatal as is the diffuse variety of carcinoma. The carcinoma which develops in an encapsulated adenoma offers a good chance for cure if a complete excision is done at a reasonably early time. Cysts are best excised with as little damage as possible to the surrounding glandular tissue. Solid adenomas have potential danger in two directions. On the one hand, malignant degeneration; on the other, the development of thyrotoxicosis.

Toxic goitres include smooth and nodular goitres, in which, added to the neighborhood symptoms produced by the swelling in the neck, there are present glandular symptoms produced by constitutional reaction to the absorption of an increased quantity or altered quality of thyroid secretion. These glandular symptoms are grouped under the term of hyperthyroidism or thyrotoxicosis.

Exophthalmic goitre (Graves' disease, Basedow's disease) typifies the fully developed smooth goitre with hyperthyroidism. Toxic adenoma represents the group in which there are definite constitutional symptoms, with a nodular goitre. At operation, one or more encapsulated adenomas are found growing on the surface or within the lobes of the thyroid. Apparently the hyperthyroidism in these cases is caused by the activity of the epithelium of the adenoma.

The diffuse adenomatous goitre is characterized by an insidious development of toxic symptoms with a progressive enlargement of the thyroid which gradually becomes nodular. The adenomatous nodules in such glands are not distinctly encapsulated, and their diffusion throughout the lobe may make them practically conglomerate.

This division of toxic goitres is useful for clinical classification and study. With exophthalmic goitre the disease runs a course in which exacerbations and remissions of the intensity of the symptoms is a striking feature.

*Read before the Sectional Meeting of the American College of Surgeons, at Roanoke, Va., January, 1928.

In some cases the course is fulminating, and, if untreated, the patients are likely to die in an acute thyrotoxicosis.

By the administration of iodine, many of these critically ill patients have been brought to a stage resembling the spontaneous remission of the milder forms of the disease. This use of iodine, revived and popularized by Plummer and his associates at the Mayo Clinic, leads to interesting speculation regarding the pathological chemistry of the disease.

The studies made by Reinhoff, Tate Mason and others show that the histological picture in the thyroid noted after an iodine remission is identical with that found in glands which have undergone spontaneous regression. The change is an approximate return from the hyperplastic and hypertrophic to the normal resting gland. Reinhoff describes areas of hypo- and hyper-involution found in the glands following both types of remission.

He suggests that these areas may supply an anatomical basis for explaining the temporary benefit of iodine medication, and its failure to bring about entire subsidence of thyrotoxic manifestations, as well as the gradual development of adenomatous nodules as a result of repeated hyperplasia and hypertrophy followed by regression that occurs with the spontaneous exacerbations and remissions of the hyperthyroidism.

Just how far these observations as well as those of Allen Graham determine the relationship existing between benign tumors of the thyroid without glandular symptoms and the toxic adenomas described above, as well as the diffuse adenomatous goitres, is a matter for further study. (See also *Archives of Surgery*, January, 1928).

At present it is convenient to make a clinical differentiation between exophthalmic goitre and toxic adenoma. In the former, with its exacerbations and remissions, its relation to normal hypertrophies, to infection, and especially to disturbance of other endocrine organs, there may be room for honest difference of opinion regarding the best method of treating the patient. In the toxic adenoma, however, there is a constant and cumulative thyrotoxicosis. The heart and blood vessels bear the brunt of the attack, and the cardio-vascular condition resists treatment while the goitre remains in the neck. There is no question about the need for surgery in the treatment of these patients.

Toxic goitres demand for their successful treatment team work by internist and surgeon and often many of the associated specialists of the hospital. Both before and after operation the management of one of these patients may tax the ingenuity and skill of the entire staff.

The great majority of our patients showed constitutional symptoms sufficiently marked to bring their lesions into the class of toxic goitres. For this reason, a recital of the methods employed in their treatment seems of interst. Whenever possible, the patient is placed in a private room or cubicle. If this is not possible, one of the corner beds in the open ward is secured. All means available are used to make admission to the hospital free from distress and discomfort. Adjustment of social and economic problems plays an important part in reaching this end.

Once admitted, the best efforts of nurses, house officers and attending staff are directed to securing the confidence of the patient. A thorough study of the patient, psychic as well as physical, is begun. The assistance of the internists is essential here, and often is obtained best by admitting the patient to the medical service. The surgeon, however, should continue to study the patient, because the final responsibility for the outcome of the operation rests on him and cannot be delegated.

This preliminary study often brings out the existence of lesions other than the goitre. When the treatment of these other lesions requires surgical operation, judicious study must determine whether the thyroid or other operation should be performed first.

It is impossible to have any fixed rules to govern such cases. Generally it is our custom to remove the source of a focal infection before attacking the goitre. In many instances, the thyrotoxic symptoms have been abated to a great degree by this procedure. In addition, the reaction to such an operation as tonsillectomy gives a measure of the patient's resistance to surgical operation in general. On the other hand, when the patient showing marked toxic symptoms has been brought into an operable condition by preliminary medical treatment, thyroidectomy is done before any other operation is attempted. The removal of the toxic goitre relieves the heart and other organs, and in this way diminishes the risks of subsequent operation.

The preliminary treatment includes rest, diet

and medicines. The patient must rest in bed in a quiet room, or a screened bed in the ward, and useless visitors should be excluded. Good ventilation leads to relaxation and ease. Sleep may be spontaneous or be secured by the use of drugs. Of these, the barbital group of sedatives are most satisfactory. Luminal in doses of one and one-half grains every eight hours is usually sufficient. Alkaline bromides occasionally are given in place of luminal. Opium, or its alkaloids, morphine and codeine, are often used. During the period immediately before operation, the patient is kept well under the influence of opium, so as to be rather oblivious to the trip to the operating room. With some patients opium produces restlessness and excitability rather than quiet and stupor. Preliminary experimentation with the drug discovers this peculiarity and permits the selection of some other sedative.

In our hospital we have not been able to develop a method resembling that carried out in the Cleveland Clinic. For this reason, we attempt to substitute, for operation in the patient's room, repeated inhalations with analgesia, and other methods of stealing the goitre, a method of bringing the patient to the operating room with as little physical and mental disturbance as possible. Our chief reliance is placed on the judicious administration of opium.

The diet is one with high caloric value, but low protein and free from stimulants. Water in large quantity is required; about 3,000 c.c. a day should be given as plain water, or as lemonade, orangeade, or some other drink which will avoid distaste and monotony. When fluids by mouth are refused or vomited, glucose solution is given by rectum, 1,000 c.c. of 5 per cent solution every eight hours. When an irritable rectum prevents the use of this method, it becomes necessary to administer the water by subcutaneous injection. This administration may be made painless by the addition of one-sixteenth per cent novocaine to the solution, as recommended by Willard Bartlett (*Annals of Surgery*, Feb., 1921, 73, 161). In rare cases it may become necessary to give 10 per cent glucose solution intravenously. In one of our cases, when both rectal and hypodermic methods failed, on the advice of Doctor Harvey Beck, we were able to give sufficient fluids by means of the duodenal tube.

When the patient is emaciated, and especially in cases with marked gastro-intestinal disturbance, transfusion of blood is employed.

Iodine.—In spite of the marvelous relief and abatement of symptoms that follows the use of Lugol's solution in most cases, we believe the drug should be given under careful supervision and with caution. The best results have been obtained in the cases of smooth goitres, but good effects have been noted in a few nodular ones. One the other hand, an occasional patient with a smooth goitre has not responded, and in one of our cases iodine medication seemed to do harm. As a rule, good effects were not obtained in the presence of a nodular goitre. The beneficial effect is most marked on the cardiac and the nervous symptoms. This relief of symptoms is not accompanied by restoration of debilitated organs or repair of visceral damage. Therefore, these hazards must be borne in mind when operating on patients during an iodine remission.

Digitalis.—This drug is not used as a routine remedy for the relief of tachycardia or as a preventive of post-operative fibrillation. When the heart action is irregular as well as rapid, and when there are any signs of congestive heart failure, digitalis is given under the care and direction of the medical colleague or consultant.

Neither X-ray nor radium has been used as preliminary treatment. The basal metabolic rate is determined and is used as one measure of the degree of thyrotoxicosis present. It must be remembered that in some cases the rate may be low because the patient has exhausted the fuel necessary for maintaining a high one. The basal metabolic rate has not the absolute value which its numerical expression has seemed to carry with it. The rhythm and rate of the heart's action, increase in body weight, absence of gastro-intestinal disturbance, placidity, and more particularly the development of emotional self-control by the patient, have equal if not greater value in deciding on fitness for operation.

When the course of preliminary treatment has been carried out with proper consideration of psychic conditions and influences, it is not uncommon to have the patient, who, on admission was apprehensive, emotional and restless, express a desire for an operation, and to be undisturbed by its contemplation, discussing the probable date and time without emotion. When such a condition can be obtained, a high basal metabolic rate and other signs ordinarily

considered contraindications lose weight in effecting our conclusion.

The night before operation the patient is given two grains of thyroid extract. No other immediate pre-operative treatment is given. Enemas and similar ordinary routine procedures are avoided. Care is taken that the patient has a quiet night and is not disturbed in the early morning, so that the trip to the operating room is not preceded by a period of apprehension or excitement. Once in the operating room, the patient is placed on the table and the anaesthesia begun without any loss of time. Surgeon and assistants are ready to proceed as soon as the patient is unconscious.

Whenever possible, our operation is a one stage bilateral sub-total thyroidectomy with closure of the wound. According to the condition of the patient, this is varied in many ways. The wound is left open, to be closed at a later time. One lobe, or one lobe and the isthmus, is removed and the wound left open. The second side is operated upon within two weeks, or the wound is closed and the patient sent home, to return for the second operation after three months or longer. Ligations are done much less frequently since iodine has been used in the preliminary treatment. Unilateral or bilateral ligations at the superior pole is done almost exclusively. Hot water injections were used in one case with some benefit, but did not produce a cure. In one case, X-ray exposure seemed to cure the patient who had an exophthalmic goitre with cardiac decompensation. In another case, a long course of X-ray treatment ended in failure, and the patient finally was greatly improved by operation. Except the ligations, all our operations are done under ethylene anaesthesia. As a rule, the ribbon muscles are not cut across, but, should their division be necessary for good exposure, this is done between clamps. A cigarette drain is placed in each fossa and brought out through the split ribbon muscles, at the angle of the incision whenever the wound is closed.

After the operation, the patient is given an alcohol rub before leaving the table. On returning to bed, six ice bags are placed—one against each thigh, one on either side of the neck and the chest. One pint of Fischer's solution (formula—dried sodium carbonate 4.33, sodium chloride 14, water 1,000) to which is added two grains of thyroid extract, is given by proctoclysis. Sufficient morphia to produce quiet is given hypodermically at intervals. If there is no gastric upset, water and fruit juice drinks are given freely; otherwise, glucose and water are given by rectum or hypodermically.

When the pulse is rapid, Lugol's solution is given, ten drops, three times a day, and when the heart's action is irregular, digifoline, digitan, or some similar product, is given hypodermically. In the management of the post-operative cardiac disturbances, we rely on the advice of the medical colleague who directed the pre-operative study.

Inhalations of steam with compound tincture of benzoin relieve tracheal or laryngeal irritation. A special form of vaporizer, heated by electricity, is useful for this purpose.

The wound is dressed on the second day and the drains taken out. A large soft dressing gives most comfort during the first week. Sponges and packs are used to combat high temperature. Morphia, when tolerated, is the best remedy for pain and restlessness. A skilful and tactful nurse can accomplish a great deal in quieting the restless patient.

Most of the wounds heal promptly and the skin sutures or clips can be removed at the end of a week. Unless there is a post-operative crisis, the patients show considerable improvement by the time the wound has healed, and then are turned back to the medical side for further study and advice.

Post-Operative Complications.—The acute post-operative crisis is a serious complication. The preliminary care of the patient has reduced the frequency of its occurrence. Apparently these dangerous symptoms indicate a sudden great demand for thyroid activity, which is met by the excretion of imperfectly developed chemical compounds by the crippled remnant of the gland. The immediate pre-operative and post-operative administration of thyroid extract is intended to shield the traumatized remnant from this demand.

To meet such a crisis, we administer glucose solution in as large a quantity as can be given by rectum and hypodermically, or intravenously. Cold sponges or packs are used to combat fever and restlessness. Morphia is given freely. With patients who do not tolerate opium, sodium bromide is given with the rectal glucose solution. Lugol's solution, twenty drops every three hours, is given by mouth if there is no vomiting; otherwise, sixty drops is added to each pint of glucose solution given

by rectum. We have not had opportunity to use the thyroid residue, recommended by John Rogers (*Surgery, Gynecology & Obstetrics*, April, 1926, 42, 567). This product has a great advantage in that it may be used hypodermically.

Laryngeal Paralysis.—Vocal disturbance, varying from hoarseness to complete aphonia, has occurred. We have had no permanent loss of voice. This temporary aphonia in one case came on immediately after operation; in another, after four days. In both the vocal cords were immobile at first, but gradually became active. In one other case there was immediate and persistent aphonia, but laryngeal examination one week after operation showed that the cords were not paralyzed.

Tetany.—The relation of tetany to damage of the parathyroids is well known. We have had two cases of post-operative tetany. In one, the symptoms came on within five days of operation but disappeared after three days' treatment with calcium, and have not returned. In our other case, the symptoms came on about two months after the removal of all but a small remnant of a large exophthalmic goitre. In spite of the administration of calcium and dried parathyroid, this patient was critically ill for nearly eighteen months, when she began to improve and gradually recovered. She has been free from symptoms for more than eight years, but she leads a secluded and protected life. This same patient is the only one of the series in whom a cataract developed after operation for exophthalmic goitre.

Post-Operative Hypothyroidism.—Two patients, both of whom were young women and were operated upon for exophthalmic goitre, show signs of hypothyroidism. Increased weight, with brawny subcutaneous tissues, are the prominent symptoms. The menstrual function is not disturbed in either case. Neither patient has been given any treatment for the complication.

Recurrent Hyperthyroidism.—As far as I am able to learn, there has been no recurrence of hyperthyroidism in any case where the bilateral operation was completed. One of our patients, a woman, aged forty-two years, with a nodular toxic goitre, had been operated upon fifteen years before by another surgeon who removed a single adenoma. Two others came to us because of recurrent adenomas. Else (*J. A. M. A.*, Dec. 24, 1927, 89, p. 2153) recommends a post-operative course of treatment with Lugol's solution until the remnant of the gland has reached a proper stage of regeneration. We have not carried out such a course of treatment, but have followed the recommendation of Harry G. Sloan in searching out and treating foci of infection, especially those of the nose and throat, before and after thyroidectomy.

115 *West Franklin Street.*

PYELITIS OF INFANCY AND CHILDHOOD.*

By J. L. BLANTON, M. D., Fieldale, Va.

Pyelitis is the most frequent urological disturbance found during early life. It occurs in acute and chronic forms and causes such a variety of symptoms that a correct diagnosis of the condition is frequently not made. Pyelitis may arise as a primary infection, but usually it follows some other acute illness. This is one reason that the condition is often overlooked.

Pyelitis, occurring as a primary disease, is found most frequently during the early months of life, and chiefly in girl babies. This type of the disease is due almost entirely to the colon bacillus, and is thought to be an ascending infection, the bacilli traveling up through the urethra and bladder on to the pelvis of the kidney by way of the ureter or lymphatics. This preponderance of the disease in girl babies is due to the close proximity of the urethral opening and the anus, and also to the very short urethra of the female, thus predisposing to a colon infection more often than would be the case in the male child.

The disease may also be due to direct extension of infection from some nearby organ, such as the appendix, or other portion of the intestinal tract. In this case, it is a secondary infection following an intestinal upset or other abdominal trouble. It may also result from a hematogenous or blood borne infection, in which case the causative organisms are carried from some distant focus to the kidney pelvis, there setting up inflammation. Any obstruction to the urinary flow from the kidney predisposes to infection. Pyelitis may follow acute infections of the respiratory tract, notably tonsillitis, bronchitis, and pneumonia. It is also a fairly frequent complication of typhoid

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fever, scarlet fever, measles, and other acute infectious diseases.

The common causative organisms, in their order of frequency, are colon bacillus, staphylococcus albus and aureus, streptococcus, typhoid bacillus, pneumococcus, and bacillus pyocyaneus. A few other organisms are occasionally found. As stated, the colon bacillus is found in the majority of cases, but some authorities consider it a secondary invader, the streptococcus preparing the field and then being killed out by the stronger foe, the colon bacillus. Sometimes two or more organisms are isolated, but these are the rare cases.

Pyelitis is divided into acute and chronic forms. The acute form is characterized by a sudden onset, frequently with a chill, even in the young child, followed by high fever and sweating. General aches and pains may be present, but often the pain is confined to the abdomen or loin. Drowsiness is common. Nausea and vomiting are often seen. Tenderness may be found over the kidney region in the back or along the course to the ureter. Very often the disease will simulate an acute attack of appendicitis. Frequent burning urination with tenesmus is only found when there is an accompanying cystitis. The temperature is usually high, but may vary from normal to 105°. The urine contains pus cells, sometimes red blood cells, and a trace of albumen. An uncomplicated pyelitis does not show casts. There is usually a restriction in the quantity of urine voided. As the condition improves, the urinary flow increases, and the pus diminishes, with a complete disappearance with recovery. The acute symptoms usually last from three to ten days, but some cases assume a typhoid state and the fever persists much longer. Other cases simulate malaria quite closely, being characterized by recurrent chills and fever.

The chronic type of pyelitis may be a sequel of the acute form, or it may arise as a complication of some other disease, and pass unrecognized unless discovered by urinalysis. These chronic cases may exist for months or even years without causing symptoms that would point to the true nature of the trouble. Such cases are often spoken of as the quiescent or silent type of pyelitis. The usual case, however, is characterized by anemia, under-nourishment, sallow complexion, general malaise, pain in the back or abdomen, and recurrent spells of fever lasting several days. A cystitis is often present in these chronic cases, causing frequent voiding with burning and tenesmus. Bed-wetting is sometimes due to this condition. Chronic pyelitis is one of the causes of malnutrition, and an urinalysis should always be made in malnourished cases to rule out this condition as a possible cause.

The diagnosis of chronic pyelitis is not difficult, but the true nature of the trouble calls for a careful examination, especially when the urine is acid, to rule out renal tuberculosis. Microscopical examinations and guinea pig inoculations should be resorted to when there is any doubt as to the existence of a tubercular condition, for a good prognosis in these cases depends upon early recognition and early surgical intervention.

Treatment

We have the choice of two different forms of treatment for the acute type of pyelitis, the alkaline and the antiseptic treatment. The alkaline treatment is particularly indicated in those cases having an acid urine of diminished quantity and full of pus cells. Some alkaline diuretic, such as potassium citrate or acetate, or a combination of alkaline diuretics, should be used, and fluids forced. Lemonade is valuable and is usually readily taken. Cream of tartar may be added to this if desired. The patient is kept in bed on soft diet and treatment continued until the temperature falls and the symptoms subside. If the pyuria is not cleared up promptly by this method, then we resort to the antiseptic treatment.

The antiseptic treatment consists of giving certain antiseptics which are excreted through the kidney, hoping thereby to render the urine sterile. Boric acid has a moderate antiseptic action in the urine, but often upsets the stomach, and is best avoided in the acute attacks. Salol is useful, particularly in the cases with prominent bowel symptoms. The common antiseptic used, however, is hexamethylenamin or urotropin. This drug is readily absorbed when given by mouth, and is excreted through the kidneys. When it comes in contact with an acid urine, it is split and formaldehyde given off. This split product, formaldehyde, renders the urine sterile. Urotropin passes through the kidneys as an inert substance unless the urine is acid. Therefore, if the urine is neutral or alkaline, an acidifying drug, such as sodium acid phosphate, should be given in sufficient dosage to make the urine acid in reaction.

Recently another antiseptic has been advocated for use in these cases and good results claimed from its use. It is a resorcinol derivative known as hexylresorcinol. It may be given either in capsules or in liquid form, the drug being dissolved in olive oil. If given in sufficient dosage over sufficient time, symptomatic relief is obtained and a sterile urine will usually result in the acute cases, but the cost of the drug is almost prohibitive.

Urotropin and other drugs have been used intravenously in the treatment of pyelitis, but the results obtained scarcely warrant this type of treatment.

The treatment of the chronic cases often taxes the ingenuity of the attending physician. Both the alkaline and the antiseptic forms of treatment give rather discouraging results at times. Many cases, even in young children, are treated by urologists with the aid of the cystoscope. The attempt is made to eradicate all obstruction to the urinary flow and to treat the condition locally by means of lavage with antiseptic solutions. This form of treatment often succeeds where medical treatment has failed. Recourse is also made to vaccine therapy in some cases. This has proven fairly successful where an autogenous vaccine in ascending doses has been used. Repeated short courses are better than injections continued for an indefinite time.

The general condition of these patients should always command our attention. All foci of infection, particularly infected tonsils and adenoids, should be removed. The anemia should receive appropriate treatment and an ample nutritious diet ordered.

Summary

1. Pyelitis of infancy and childhood is a very frequent urological disturbance.
2. It occurs in acute and chronic forms.
3. Renal tuberculosis should always be ruled out in the chronic cases.
4. Chronic pyelitis is often over-looked as a cause of malnutrition.
5. The treatment, while unsatisfactory, should be persistent and thorough.

KIDNEY INFECTIONS DURING PREGNANCY.*

By R. M. Lecomte, M. D., Washington, D. C.

It is a well established principle of urinary pathology that whenever there is obstruction to the free egress of urine, sooner or later infection will supervene. In a large measure, the duration of infection will depend upon the degree of obstruction, and the extent of the damage done will depend on the length of time it is permitted to act. Thus, in stricture of the urethra, there is always behind the obstruction a trap which is constantly moist, favors the development of bacteria, and eventually results in localized inflammation. Obstruction at the bladder neck, with residual urine, eventually leads to infection and inflammation of the bladder. When the obstruction occurs in the ureter, as in stone, the ureter back of it dilates, and here, as elsewhere, if the free flow of urine is not resumed soon, infection results.

A second principle of urinary pathology is, that the hazard to the integrity of the kidney is roughly in proportion to the distance from it that the obstruction occurs; thus, a stricture of the urethra is less damaging to the kidney than an enlarged prostate, and a stone in the juxtavesical ureter less harmful than one obstructing at the ureteropelvic junction.

In kidney disease, it is striking how much damage may be done to important and generally sensitive organs without the occurrence of symptoms that point definitely to the seat of trouble. This is particularly true of lesions that are essentially slow in their development and do not present any sudden obstructive lesions. Such obstructions are readily produced in the urinary tract by the gradual enlargement of the pregnant uterus.

A fourth generalization is that a patient presenting frequent, painful urination, with pyuria, may have serious kidney infection and should be given the benefit of a complete urologic study as soon as possible. With this dictum in mind, primary cystitis has become an increasingly rare disease, and instances of kidney infections of various types have multiplied. The bladder may be termed the sentinel of the urinary system, for, while meriting careful consideration and thorough examination for its own sake, disturbances in its function are commonly the first warning of lesions elsewhere in the tract.

During pregnancy, the urinary organs are changed in form and disturbed in function by the enlarging uterus. Due to its intimate relation with the uterus, the urethra is elongated early, and the bladder is soon pressed upon

*Read before the Medical Society of the District of Columbia.

and drawn upwards by the enlarging uterus, so that, by the third month, it becomes an abdominal organ. On the functional side, these changes lead, in many instances, to frequent urination and the occurrence of residual urine, with the common sequence of bacteriuria and inflammation. The pelvic portion of the ureter is pushed to the side and is probably elongated by the enlargement of the lower uterine segment to which it is intimately attached. On the functional side, sluggish peristalsis has been noted in eighty of one hundred normal pregnant women cystoscoped. The abdominal ureter and kidney pelvis are commonly found dilated during pregnancy. We have noted varying degrees of dilatation in all normal pregnant and parturient women submitted to pyelography and in all who presented symptoms of renal pain or were infected. This situation—a bladder containing residual urine and a ureter and kidney pelvis dilated from mechanical obstruction—furnish an ideal combination for the development of renal infection if the proper organism is introduced.

I have not been able to find statistics regarding the relative frequency of cystitis and pyelitis during pregnancy, perhaps because the criteria by which these two complications are judged differ greatly; it would seem, however, from conversations with obstetricians that cystitis is relatively common and pyelitis rather rare. Descriptions of pyelitis of pregnancy in current text-books on obstetrics are meagre and inadequate insofar as they may convey the impression that pyelitis is to be differentiated from cystitis by the presence of renal pain and of symptoms of generalization of infection, such as chills, nausea, vomiting, etc. From a urological viewpoint, this differentiation falls far short of the mark, for, while it is true that pyelitis is certain or very probable when they are present, their absence does not mean that the kidneys are free from infection. The majority of women with cystitis are found to have the primary and major pathologic lesion in the kidney, and many of these exhibit neither renal pain or tenderness nor rise of temperature. In the cystitis of pregnancy, it is reasonable to suppose that there is among them—as in non-pregnant women with cystitis—a residue of cases with pyelitis that escape detection because they do not present clinical symptoms that arouse suspicion of its presence. For the detection of this residue, the pregnant woman should be subjected to the same searching urologic examination as the non-pregnant one who presents frequent, painful urination and pyuria. In the minds of some, the risk of inducing premature labor or abortion by cystoscopy may seem a contraindication. I believe that this risk is minimal, and that it should be run for the sake of an accurate diagnosis and the early institution of definite treatment if the kidneys are found to be infected. I have never known of its occurring when the accident might not as well have been due to the general infection, already present, as well as to the cystoscopy that was done.

With the data at hand, a rational view of the sequence of events in pyelitis of pregnancy would be as follows: Early in pregnancy, the bladder is distorted, so that residual urine is present. In a certain proportion of these cases, the residual urine becomes infected and a bacteriuria results, and, in a portion of these, the bacteria are able to exert their specific action on the tissues with resulting inflammation or cystitis. While these changes are going on in the lower tract, the ureters and kidney pelvis are being slowly dilated by the intermittent obstruction afforded by the enlarging uterus, and in them a bacteriuria similar to that in the bladder develops. In some instances, either because of heightened resistance on the part of the patient or of the absence of bacteria specific for the tissues at hand, the process stops here, while, in others, inflammation, with its usual sequelae, results. From these the bladder becomes infected, so that a vicious circle is established, and the kidney may be reinfected from the bladder either from the blood stream or ascending along the lymphatics of the ureter. The earlier in pregnancy these changes occur, the more serious portent do they bear for the foetus and for the mother, for, unless they are relieved by treatment, the foetus usually dies from the infectious toxemia, and the uterus empties spontaneously. Fortunately, the kidney lesion is usually influenced favorably by the emptying of the uterus, so that serious permanent damage is unusual.

Clinically, the cases may be divided into a *low grade septic type* with few general symptoms of infection—perhaps only slight fever

and apathy, or a *high grade septic type* with high fever, chills, nausea and vomiting.

Rest in the bed during the febrile intervals is indicated in the way of treatment, and the patient should lie as much as possible on the side opposite to that infected, in the hope of relieving the pressure of the uterus on the ureter by gravity. This is also the object of having her assume the knee-chest position for such intervals as she may be persuaded to do so. These should not be overlooked or neglected, whatever other means may be taken up. Medicines administered are supportive and directed at giving the urine an antiseptic value or changing its reaction. Of these, sodium citrate seems to have a reputation out of proportion to that which it has in other types of pyelitis: what the rationale of it is is not apparent. The use of urinary antiseptics is quite general and their value somewhat questionable: an appropriate one should be used for the sake of securing whatever value it may have.

Of minor surgical measures, the instillation of concentrated solutions of antiseptics into the bladder has a certain vogue and is commented upon favorably. The effect of this is probably indirect, by influencing the infection of the bladder, for ureteral reflux is rare during pregnancy. Obstetricians and urologists seem at variance as to the advisability of drainage and medication of the kidney pelvis by the ureteral catheter, the former usually preferring a Fabian policy to the more definite if somewhat uncomfortable and inconvenient treatment that the urologist is apt to suggest, if asked, and pursue if given his way.

To bring before obstetricians the damage that goes on in these cases, even mild ones from a clinical viewpoint, and to urge earlier adoption of the ureteral catheter, both in diagnosis and treatment, is the object for which this paper was written. As was stated above, the urologist looks upon any pyuria in the female as the result of kidney infection until they have been proven to be free from it. Since clinical grounds are not adequate for the exclusion of renal infection, it would seem proper to assume that every case of pyuria during pregnancy should be cystoscoped and the kidneys excluded as a factor in it. If such a procedure is followed, many cases of supposed cystitis will be shown to be mild pyelitis, and some of supposed pyelitis to be merely cystitis, the renal pain present being due to back pressure without infection. It is in this latter type that postural and medical treatment gives best results. If the case has advanced so far that one is able to make a diagnosis of pyelitis on clinical grounds, cystoscopy is certainly indicated. The removal of the purulent residual urine and lavage of the pelvis gives immediate results in lessening of the pain and the general symptoms of the infection. In severe cases, it may be advisable to keep the catheter in place for a few hours or a number of days and to use large calibre catheters. The immediate improvement following this manoeuver justifies its use in even the very mild and the very severe cases.

In any case, the criteria as to cure are to be found not in the absence of pain and fever, but in the freedom of the urine from the pus and bacteria, and the case should be under strict surveillance until this is accomplished.

In evaluating any method of treatment, it is always well to remember that the greatest aid in the recovery of an infected kidney is to establish free drainage. During pregnancy this may be brought about independent of whatever treatment is given, and lead to a good result.

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TREATMENT OF THE PATIENT WITH PEPTIC ULCER.

By W. RANDOLPH GRAHAM, M. D., Richmond, Va.

Peptic ulcer occupies an unique position. From the standpoint of treatment, it has long lain in the "no man's land," between the surgeon on one side and the internist on the other. That satisfactory treatment should be the result of an evolutionary process was obviously inevitable from the beginning. Fortunately, however, for all concerned, peace has been declared between the opposing factions. The saner surgeons and internists, working shoulder to shoulder on this important question, have eliminated many of its difficulties, and eradicated still more of the technicalities blocking progress.

The chief difficulty arose from a condition that was so commonly met with in medical history. Both sides were attempting to treat a pathological condition known as peptic ulcer, rather than treating the patient in whom such a condition was known to exist.

There is not at present, and I dare say never will be, any satisfactory treatment for duodenal or gastric ulceration. On the other hand, there are most satisfactory methods at the command of the combined forces of medicine and surgery for the relief and cure of persons suffering with these diseases.

The position of the consultant, to whom a person suffering with peptic ulcer applies for relief, is not altogether an enviable one. He must immediately assume the triple role of judge, jury and prosecuting attorney, and must dole out a verdict which is frequently far-reaching in its effect upon the future health, happiness and longevity of the accused. Fortunately his will is absolute, and the verdict can be changed from time to time, or remain unchanged, according to the dictates of his judgment.

For the sake of brevity, it will be assumed that the diagnosis is undeniably correct,—that the patient has been put through the various clinical and laboratory procedures, including fluoroscopy and X-ray, which we are so fortunate in having at our disposal.

With the diagnosis established, we are brought face to face with a compulsory decision,—one which we would so often like to dodge. Should or should not this case go to surgery? We call upon precedent, but are we greatly helped thereby? Should the search be begun at the period of the feud which existed between surgeon and internist, there will be little consolation obtained; but should it begin within the past four years, the era of peace, one will find invaluable aid.

Charles A. Pannett, an English surgeon, believes "when symptoms of ulcer appear, no thought of surgery should enter the practitioner's mind until proper medical treatment has been instituted and proved to have failed to bring about a cure. When one, or better two, attempts at medical cure have been ineffective, the surgeon may rightly intervene. Surgery in this disease is to be contemplated only upon the failure of medicine. No greater tribute could be paid to the worth of surgical treatment in gastric and duodenal ulceration than the recognition of the fact that the 70 to 90 per cent of the cures claimed have occurred amongst those patients that cannot get relief in any other way. The intractable only should come under the hand of the surgeon." In regard to duodenal ulcer he states, "It is no more justifiable to recommend every patient with a duodenal ulcer to submit to a surgical operation than it is in the case of gastric ulceration. Putting aside the serious complications of hemorrhage and perforation, a counsel of delay is always demanded unless a fair and proper trial of medical measures have been carried out."

Willis, of Richmond, makes the following statement: "Effective treatment of gastric and duodenal ulcer depends upon close co-operation between surgeon and internist. It is my firmly established belief that every case of duodenal ulcer that has not progressed to perforation or is not complicated by pyloric obstruction should be seen by an internist,—that only after a reasonable trial of medical treatment has resulted in failure should resort be had to operation."

Lahey, the surgeon, and Jordon, the gastro-enterologist, in their clinic at the Deaconess Hospital, Boston, have established the following routine as to the relation of the medical to the surgical treatment of gastric and duodenal ulcer. Following the indisputable demonstration of the ulcer, the patient is informed that he must remain in the hospital, in bed, on a rigid diet, for a period of from three to four weeks. If he can be kept free from symptoms and not show evidences of ulcer activity, he may then leave the hospital upon a modified diet, and that as long as he can continue satisfactorily on this diet he may safely avoid surgery. But should he not be free from symptoms or evidences of an active ulcer, either while in the hospital upon a rigid regime or after leaving the hospital and upon a modified one, he must then accept surgery or seek advice and management elsewhere, accepting the entire responsibility for such a decision.

After years of trial of the above regime the conclusions of these authors are stated as follows:

"1. It is desirable to exhaust the possibilities of adequate medical measures for gastric and duodenal ulcers before submitting them to surgery.

2. Medical measures in gastric and duodenal ulcers, in addition to their ability to relieve, aid in confirming or disproving diagnosis, and, furthermore, are of real value in certain cases in demonstrating the need for surgery.

3. Preliminary medical management with rest in bed makes the operation safer and easier in many cases later to be submitted to surgery.

4. Gastroenterostomy, even with its possibility of failure to cure, and of subsequent gastrojejunal or jejunal ulcer, is still the most useful of all the gastric operations. The fact that when its employment as a curative measure in gastric or duodenal ulcer fails, it still represents an already accomplished part of the radical operation, makes it then only a complete failure when gastrojejunal or jejunal ulcer follows its employment.

5. Radical resections should be reserved for those cases where the indications justify the risk of its employment as a primary measure."

From the foregoing, one gathers that, with few exceptions, cases of peptic ulcer should be started on medical regime as soon as seen. In my opinion, the only absolute indications for surgery without medical trial are those aimed at the cure or prevention of peritonitis. A perforated ulcer is, of course, a surgical problem entirely. At the same time, one which is about to perforate or has penetrated deeply through the muscular coat and has become surrounded by so much fibrosis as to be little disposed to heal, should be always seriously considered from a surgical standpoint. When a persistent fleck remains in a Haudek's diverticulum after the passage onward of the bulk of a barium meal, surgery is almost certainly needed to bring about a cure. I like to consider all other surgical indications from the standpoint of complications which arise with the patient on medical regime.

The surgical indications arising during the medical management of peptic ulcer may be enumerated as follows:—massive or continuous hemorrhage, perforation, obstruction at the pylorus, hypersecretion, continuous secretion, perigastritis and hour-glass deformity of the stomach.

I find it possible to summarize my views with a consideration of the following:

1. The age of the patient.
2. The location of the ulcer.
3. The duration of symptoms.
4. The nature and extent of the lesion.
5. The effect of the lesion upon other important gastro-intestinal functions.
6. The effect upon other organs.
7. The intelligence of the patient.
8. The economic status of the patient.
9. The patient's general physical condition.
10. Whether or not the patient is to remain under my observation and his accessibility in the event of an emergency.

Let us consider in a little more detail the pertinent points involved in such a summary. It has long been, and still is, a mooted question, whether or not gastric ulcers undergo malignant degeneration. There is much to be said on either side. White, in a prolonged study of fifty-one gastric ulcers, encountered only one case of malignancy. At the Peter Bent Brigham Hospital in Boston, they record 4.5 per cent in 201 cases. At the Massachusetts General Hospital, Dr. Wright, the pathologist, says, "Cancer developing on chronic ulcer of the stomach is very rare, that is cancer found in only one portion of a chronic ulcer. I have seen only a few, perhaps three or four cases in my life." Dr. F. B. Mallory, the pathologist at the Boston City Hospital, says, "We have ulcerating cancers, but I have never seen a cancer originating in peptic ulcer, that is, a chronic ulcer with a cancer nest in the border or base." Einhorn, Rehfuss, Smithies, Soper, Friedenwald, Alvarez, Richard Cabot and Harlow Brooks place the figure variously at zero to 1 or 2 or 5 per cent.

Thus, we see there are many prominent authorities in America today who believe that malignant degeneration of peptic ulcer is at least exceedingly rare. A simple, non-obstructing, comparatively shallow gastric ulcer at any age, and which appears to improve under medical treatment as judged by symptomatology and X-ray, should, in my opinion, be continued on medical regime as long as improvement can be demonstrated.

In discussing location, a reiteration of the foregoing is for the most part involved. By location is meant whether the ulcer be situated on the oral or ab-oral side of the pylorus. Malignancy of the duodenum is such a rara avis that the possibility of its occurrence in any given case is not given serious consideration. On the other hand, it is the practice of many internists and surgeons to consider surgical interference in most gastric ulcers. Particularly is this true with the lesions occurring in persons in or past middle life. I consider the indications here to be similar to those discussed under age.

The duration of the lesion, a point so often overlooked or thoughtlessly passed up, is of no little importance from the standpoint of treatment and prognosis. It is unanimously agreed that acute lesions should invariably be given medical trial.

We next come to a most important consideration, that of the nature and extent of the lesion. By nature I understand the type or virulence of the ulcer. No one can gainsay that a simple, comparatively shallow, nonpenetrating type of ulcer should be given the benefit of medical trial. On the other hand, the type which we have good reasons to suspect to be eroding deeply into the muscle layers, or has already done so, presents a far different aspect. Some of this type undoubtedly will do well on medical treatment, but for the most part it has been my experience that surgery offers best results.

The bleeding type, long a medical bugbear, is now not regarded so seriously as in the past. It is entirely possible for a comparatively benign, shallow ulcer to be so situated as to erode some blood vessel, thus producing hemorrhage. Bleeding *per se* rarely terminates seriously, and I feel the indications here are analogous to those just discussed under penetrability.

By extent is meant the area involved. This must always be considered before the prognosis is discussed and before any certain type of treatment is advised. Thus, a large, although comparatively shallow benign type of lesion may assume the importance of a much smaller but penetrating type.

Not too infrequently, because of the location of an ulcer more than because of its nature, important gastro-intestinal functions are so interfered with as to endanger the patient's happiness and well-being. I particularly refer to those ulcers which are so situated as to interfere with the proper emptying of the stomach, thereby endangering the sufferer's source of nutrition. Even in these cases, however, it has frequently been the experience of us all, that a certain number of ulcers undoubtedly obstructing the pylorus and producing a large gastric retention, are remarkably amenable to medical treatment. This sort of thing is seen frequently enough to justify at least a reasonable medical trial, with careful watching of the patient to be sure that he does not suffer from lack of nutrition to the extent that surgical interference could not be safely used. Should it be deemed expedient to give this type medical trial, it is of utmost importance that the patient be under constant observation, preferably in a surgical hospital.

The effect of an ulcer upon other important organs of the body should always be considered. The presence of a coexistent appendicitis, cholecystitis, or diabetes, obviously must necessarily influence one in prescribing treatment.

In no other disease, save diabetes mellitus, is intelligent understanding and co-operation on the part of the patient of such importance as in peptic ulcer. Particularly is this true if the patient is to be put on medical regime.

By the same token the economic status of the patient must be considered. Thus, one is frequently confronted with a patient who presents an ulcer which would unquestionably do well on medical regime, but who is devoid of the necessary intelligence for proper co-operation, or who would find any kind of special diet or regime next to impossible on account of his economic station. In such instances it is often deemed advisable to immediately recommend surgery.

The reasons for considering the general physical condition of the patient are so obvious as to not demand any further consideration.

The last point I wish to make in this connection is one which is quite important, but apparently often overlooked. Before outlining any regime, it should be ascertained just how long the patient will probably be under the observation of the physician, and how accessible a good abdominal surgeon might be in the event of an emergency.

We now come to a consideration of the proper medical treatment. Clinicians' opinions as to the reasons that ulcers do not heal are varying, and, as an outgrowth of these opinions, one finds diets of all kinds and descriptions highly recommended. There are those that are based primarily on the principle of decreasing irritation, and those based on decreasing the amount of erosion. Why is it that there is no one diet suitable for every case of peptic ulcer? The answer is obvious. As before stated, there is no entirely satisfactory treatment for the disease, peptic ulcer.

There are, however, many suitable combinations of food and drugs which are extremely efficacious in the treatment of the patient in whom peptic ulcer is present.

In general, the factors involved in the failure of an ulcer to heal are: 1. Infection; 2. Irritation; and, 3. Peptic activity of the gastric juice. All diets and regimes are aimed at the abolition or amelioration of one or all of these factors. It is reasonable to assume that these factors vary in importance in different individuals. If this be true, why should it be wise to prescribe a certain combination of diet and management in every case seen? It is needless to say that those cases which present signs and symptoms of pyloric obstruction, or in which there is a hyper- or continuous secretion present, or any other complication, should be immediately put on that regime which will come nearest to reducing the above named factors to a minimum. I know of no regime which comes nearer to filling the specifications than that of the late Bertram Sippy. It is equally important that such cases should have complete rest in bed for from three to six weeks at the commencement of treatment.

In prescribing treatment for those in the so-called simple or non-complicated group, one should be guided by the combined clinical and X-ray findings. Whether or not a certain line of treatment should be continued or abandoned for another should, in my opinion, depend entirely upon improvement as demonstrated both clinically and by X-ray. One should never lose sight of the fact that there can be a complete abolition of symptoms in the presence of a non-healing ulcer. Every case of peptic ulcer should be examined and X-rayed with sufficient frequency to abolish any chance of gambling with the patient's health and well-being.

It will be noted that I have made no allusions to surgical mortality or methods, and I have likewise employed generalizations rather than refinements when referring to medical treatment. Frankly, I have no pet surgical technique or medical regimen for treating the patient with peptic ulcer. Such hobbies must necessarily be reserved for those who treat the disease, peptic ulcer.

Medical Arts Building.

CHRONIC APPENDICITIS.*

By HARRY M. HAYTER, M. D., Abingdon, Va.

Since the appearance of the monumental work of Fitz,[1] in 1886, by which he was able to persuade the medical profession that appendicitis was a definite disease entity, the frequency of this diagnosis, as well as the popularity of this affliction, has increased in proportion to the literature upon this subject.

In fact, so much has been said and written about appendicitis that, to the public at large, a pain in the lower right abdominal quadrant means appendicitis, and the individual so afflicted presents himself to his physician for advice and treatment. Yet, with many of the facts concerning this disease so generally known, I feel that we might go a step further and impress upon them that pain in the region of the umbilicus and epigastrium usually means something more than "biliousness" or simple idiopathic belly-ache.

It is not my purpose to attempt to add anything new in the way of diagnostic procedure or to offer a new or more refined method of treatment of this disease, but to discuss briefly a group of cases diagnosed and treated as chronic appendicitis, and in whom the post-operative results fall far short of our hopes and expectations.

The profession has gradually come to admit that the treatment of appendicitis is surgical, and there is no surgical disease in which the treatment and results are more satisfactory than in acute appendicitis. It is true that fatalities do occur, yet in practically all of these cases the fatal termination is due to some complicating disease and not to the appendicitis.

In considering chronic appendicitis we find that there exists a wide variation of opinions, some regarding it as a hypothetical condition which serves as the playground and source of revenue for the amateur surgeon, while others regard it as a definite disease entity which is a serious menace to the health and happiness of the individual who harbors this diseased organ.

This discussion is based upon the study of 148 consecutive cases of appendicitis, the interest being primarily in those cases of chronic appendicitis which were treated on the surgical service under Dr. J. C. Motley at the

*Read at the meeting of the Southwestern Virginia Medical Society, in Marion, March 29-30, 1928.

Johnston Memorial Hospital, Abingdon, Virginia, between January 1, 1923, and January 1, 1927. All of these cases were followed up at the end of one year after operation, however, we are all familiar with the difficulties of a follow up system, as so many fail to reply to questionnaires which they receive. We trust that those who fail to reply are well, and, hence, have no further interest in their unhappy experience yet, no doubt, in many cases this is an erroneous conclusion.

In this series of 448 cases there were 228 cases of acute, non-perforative appendicitis. In this group there was one death, which occurred suddenly several days following operation and was due to embolism, giving a mortality of 0.43 per cent.

Of the 448 cases there were 97 cases of acute perforative appendicitis with either localized or generalized peritonitis. Of this group of 97 cases there were 6 who died, all of whom had a generalized peritonitis,—hence a mortality rate of 6.2 per cent.

Two cases were encountered in which the lesion of the appendix was tuberculous in nature. At the end of one year one of these cases reported his condition as improved, while no reply was received from the other.

In this series there were 121 cases diagnosed as and operated upon for chronic appendicitis. This series does not include those cases of chronic appendicitis which are found in connection with disease of the pelvic organs, chronic gall-bladder disease, or lesions of the stomach and duodenum.

Morris[2] has divided chronic appendicitis into five different groups, each having a different history and the symptoms in each group being explained by a different pathological picture. The first group is composed of those cases in which there is a progressive fibrosis of the appendix, fibrous tissue replacing the normal structure with the exception of the peritoneal covering and the nerve elements. As the fibrous tissue contracts, the nerve elements are irritated, hence a reflex irritation of the digestive organs. This lesion, when occurring in young people, is considered but one manifestation of a general physical decline, and, therefore, is given an unfavorable prognosis.

The second group comprises those cases which have had a previous attack of acute appendicitis and the subsequent formation of adhesions and scar tissue have given rise to an irritative lesion which has its local symptoms as well as its reflex influence.

In the third group are placed those cases which show an infection of the mucous membrane of the appendix and adjacent cecum, which may result from a previous attack of acute inflammation, or be due to the presence of entozoa.

The fourth group is characterized by increased tension within the peritoneal coat, due to a lymphoid hyperplasia, and is usually but one manifestation of a lymphoid diathesis.

The cases in the fifth group show chronic congestion of the appendix, yet this is but a local manifestation of a condition which is present throughout the intestinal tract.

In the series of cases under discussion, I have been unable to separate them into such distinctive groups either from the history, physical examination, or the pathological picture.

When we make a diagnosis of chronic appendicitis, it is usually based upon some group of the following symptoms: Abdominal pain, which is more frequently located in the lower right abdominal quadrant and associated with tenderness localized in this region, the pain being intermittent in character and in some cases being influenced by food, indigestion, flatulence, constipation, and general constitutional symptoms, such as weakness, nervousness and irritability.

In this series of 121 cases there were 43 males and 78 females. The average age of the females was 25.7 years, while that of the males was 29.2 years. The duration of symptoms varied from a few days to twenty-five years. Twenty per cent had had symptoms less than one year; 61 per cent from one to five years, and 19 per cent had had symptoms longer than five years.

Each case of this series complained of abdominal pain, and in 97 per cent of the cases there was pain with tenderness in the lower right abdominal quadrant; 40 per cent complained of indigestion; 38 per cent of severe constipation; 32 per cent had had attacks of nausea and vomiting, and 18 per cent complained of weakness and nervousness. In only 41 per cent of these cases was there a definite history of a previous attack of acute appendicitis.

In treating surgical diseases and observing uneventful post-operative courses, we are likely to become too enthusiastic as regards our re-

sults unless we follow these cases and learn their condition as they return to their individual vocation and field of activity. In order to have the record as complete as possible, a questionnaire is sent to each patient, who has been treated in our clinic, at the end of one year following their discharge. Of the 121 cases in this series, only 78 or 64.5 per cent replied. Of this number, 39 (50 per cent) report themselves well; 28 (35 per cent) are improved; 9 (11.5 per cent) are no better, and 2 (2.5 per cent) are worse. From this we see that in only one-half of the cases have we been successful in accomplishing our entire purpose, while we have succeeded in helping 85 per cent of these people, yet there remains 15 per cent of these cases in which we have accomplished nothing. No doubt but these percentages would be different if we could succeed in getting 100 per cent to reply to our letters, yet, unfortunately, this is not the case.

In considering the pathology of this series of cases, it was impossible to associate any given group of symptoms with a distinctive gross pathological picture. The entire series showed abnormalities of the appendix, which were attributed to an inflammatory process. In 71 per cent of these cases there were adhesions between the appendix and some adjacent structure. Six per cent of these appendices contained fecal concretions or some other type of foreign body. In 25 per cent of the cases the appendix was adherent to the posterior wall of the cecum. Adhesions around the cecum, or ascending colon, were encountered in 35 per cent of the cases.

In reviewing the group of cases who are not improved after an appendectomy, we find that in 75 per cent of these patients there was found, at operation, a large, dilated, redundant colon with evidence of fecal stasis, while only one patient, in whom a visceroptosis was found, reports himself well at the end of one year. With only two exceptions, all of the cases who are not improved by operation were found to have, in addition to chronic appendicitis, a large dilated colon, visceroptosis, or a combination of the two conditions.

In a study of 500 cases of chronic appendicitis by Deaver and Ravdin,[3] the outstanding symptom was pain, which was periodic in character and located in the right iliac fossa. The next most frequent symptom was tenderness in this same region. Constipation was found in 213 of the 500 cases.

In the post-operative follow-up of this group of cases, 45.2 per cent or 226 patients replied; 57 per cent were well; 9.7 per cent improved, and 7 per cent were unimproved.

The operative mortality in chronic appendicitis is very low. Deaver and Ravdin report a mortality of 0.27 per cent in 355 cases. Battle gives a mortality of 0.2 per cent in 1,000 cases; Gibson a mortality of 0.72 per cent in 555 cases. In our present series of 121 cases there has been no death.

Recognizing the fact that cases with symptoms suggestive of chronic appendicitis include patients whose true disease may vary from a mere appendicular hypochondriasis to that of a definitely diseased appendix, which incapacitates its host, and confronted with the unsatisfactory results which are experienced in so many of these cases, the question arises as to the solution of these problems. Abnormalities of the large bowel, visceroptosis, constipation, disease of the stomach, duodenum, and gallbladder, and, in the female, disease of the pelvic organs, seem to present our principal diagnostic difficulties. Careful histories, physical examinations, laboratory and X-ray studies, will do much to identify lesions of the digestive tract located above the cecum. It is true that it is possible to diagnose visceroptosis and an enlarged dilated cecum and ascending colon by X-ray studies, yet this information is still inadequate because it does not tell us that, as the cecum fills and drags downward on its attachment, it is not pulling against an appendix which is firmly bound down by adhesions and scars of an old inflammatory process, or pulling against obstructing bands of adhesions around the cecum or ascending colon.

The relation of the chronic constipation to chronic appendicitis is an unanswered question. It may be an etiological factor or a result of this disease, or this condition may give rise to symptoms which are attributed to a diseased appendix.

Ureteral stricture is a condition which must be considered, and all are familiar with the variation of opinions concerning its significance.

We often overlook, and fail to consider, the presence of intestinal parasites. In any case with chronic abdominal symptoms and in which the presence of intestinal parasites can be established, I feel that these should be eliminated before we resort to any operative procedure for the relief of the symptoms.

Then comes the question, when dealing with a patient in whom we suspect a diseased appendix and who may be suffering from chronic constipation, visceroptosis, or an abnormal colon, whether we are to advise immediate operation and subsequent medical treatment or to advise medical treatment first, realizing the possibility of an attack of acute appendicitis while the patient is under this type of treatment. I am inclined to believe that operation, with the correction of those abnormalities which yield to surgical treatment, followed by thorough medical treatment, will give the best results. In these cases the right rectus incision, permitting an exploration of the entire abdomen, is the incision of choice.

Proficiency in diagnosis is the constant aim of every real physician. Yet, even to those few who are so fortunate as to reach a place within sight of this goal, I fancy there will be presented packages, the exact nature of whose contents will be undetermined until they are opened and explored.

BIBLIOGRAPHY.

1. Fitz: *American Journal Medical Sciences*, 1886, Vol. XCII.
2. Morris, Robert J.: *American Journal of Obstetrics and Gynecology*, 11:180-183. February, 1926.
3. Deaver & Ravdin: *Archives of Surgery*, Vol. VI, 31-40.

Johnston Memorial Clinic.

SURGERY OF THE ACCESSORY SINUSES.

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It is not the writer's object to condemn good surgical judgment as applied to the nose and accessory sinuses, but it is his desire to make a plea for the careful study of the more or less constant anatomy of this honey-combed area and more conservative treatment of their diseased states.

The aim in diseased sinus conditions is to return the nose to as near its normal condition as possible with the least amount of damage to the tissue.

Certain physical conditions within the nose have a definite bearing on sinus involvement. They are as follows:

1. A marked superior posterior deflection of the septum.
2. Bullous middle turbinates, usually accompanied by a polypoid degeneration.
3. A middle turbinate of normal size, close to the sinus wall.
4. A shelf-like inferior turbinate lying across the nares.

No doubt a pronouncedly deflected septum is to blame for some of the troubles in the nose, but there is also no doubt in the minds of experienced surgeons that unnecessary surgery of the nasal septum is too often undertaken. The popular submucous resection of the septum so frequently resorted to by the unscrupulous and untrained rhinologists is the one operation that has done more to reflect discredit upon the rhinolaryngologist than any other.

Only the badly deflected septum requires surgical treatment. When this structure is markedly deviated it is not only out of line itself, but causes pressure atrophy of the turbinates on one side, and nature in trying to equalize the air currents, enlarges the turbinates on the other side, and with these bulgings, thickenings, hypertrophies, and hyperplasias, the air is not properly filtered or modified and the drainage and aeration of the sinuses are interfered with.

Therefore, the intranasal conditions which predispose to accessory sinus disease are particularly those interfering only in a pronounced way with normal ventilation of the nasal cavities.

Today the pendulum is starting its backward swing towards conservatism in the radical handling of sinus cases, because in the past too much normal tissue has been removed, which not only took away protection, but left non-functioning scar tissue. The chief cause of failure in sinus surgery results from the destruction of the function of the sinus due to a faulty technique in performing the various operations on these cavities.

Concerning the ethmoid labyrinth, the anatomic relations to this field are indeed noteworthy. Recall the relative position of the optic nerve at the foramen, how thin the bony wall is which separates it from the cells, and how, as the nerve courses forward toward the eyeball, it diverges more and more from the posterior ethmoid cells. We are reminded of this relation in connection with blindness of nasal origin, and also how infection of this field may extend into the orbit, giving rise to

an orbital cellulitis. The cranial fossa may be involved and ethmoidal infection extend via the ethmoidal veins, or the very intimate ophthalmic vein may carry infection into the dural cavernous sinuses. The surgical anatomy of the ethmoids is ofttimes overlooked in the many operative procedures. Surely no one part of the sinus group has been more juggled about than have the ethmoids, and truly, there is no sinus condition where it is easier to advise operation than it is on this fenced off region.

Sinus surgery is difficult surgery and one who undertakes to do it should be thoroughly familiar with the most minute anatomic structures. The post-operative complications may be dangerous, and it behooves any one attempting this field of surgery to fully acquaint himself with the anatomy by adequate morgue training.

330 *Park Avenue.*

DUMB RABIES, NOT BLACK TONGUE.

By ENNION G. WILLIAMS, M. D., Richmond, Va.
State Health Commissioner.

Dr. Joseph Goldberger's recent experiments and investigations in connection with his study of pellagra have attracted general attention to a disturbance known as "black tongue" among dogs. Dr. Goldberger shows that "black tongue" affects dogs in a manner similar to the way pellagra affects human beings and the treatment, which alleviates or cures pellagra in man also alleviates or cures "black tongue" in a dog. "Black tongue" is chiefly, if not wholly, confined to the southern states, where pellagra also occurs. Dr. Goldberger has produced "black tongue" in dogs by feeding them on a diet which will produce pellagra in human beings.

Recently my attention was called to the following statement in the bulletin entitled "Facts About Rabies" issued by the State Department of Health in 1923:

"The dumb form of rabies, so called by some writers as 'black tongue', is observed when the seat of the trouble is the spinal cord instead of the brain."

As this section of the bulletin which deals with "Symptoms of Rabies in Dogs" was written for us by Dr. J. G. Ferneyhough, at that time State Veterinarian of Virginia, I wrote and asked him if he still thought this statement was authoritative. As we look upon Dr. Ferneyhough as one of the most eminent veterinary authorities in the United States, I quote from his letter in reply:

"Anyone who has ever observed mute rabies and also has seen a number of cases of what is often termed 'Black Tongue', will readily see the importance of calling attention to the fact that in considering the differential diagnosis, it is at least wise to caution against making a mistake in treating a dog affected with black tongue by not being very careful to *carefully eliminate mute rabies* before handling the dog or allowing him to go exposed to other dogs or persons.

"Personally I have had years of experience with rabies in the dog. I have seen men who should have known better carelessly treating dogs affected with mute rabies, when as a matter of fact the veterinarian in question thought the dog had 'black tongue', so I was informed by the owner and the veterinarian. Hence after receiving many letters, covering a period of years, from owners of dogs telling me that their dog 'had black tongue', and then upon examination finding the dog to unquestionably have rabies in the mute form, I have long since deemed it very important, in such a bulletin as your department was sending out, to caution the public against mistaking a case of mute rabies for black tongue—*the mistake has been made too often.*

"During the last few years much has been said and written on a disease termed black tongue in dogs, which some years ago was not recognized as a special disease. For the above reasons, many of the younger writers now consider that there is no danger in mistaking the one disease for the other at this time. They may be right; but you are not only wise, but prudent in continuing to caution the public to look out for mute rabies when they have a suspected case of black tongue.

"I have heard this subject discussed all over this country by many of our learned veterinarians (who are now dead and gone, I am sorry to say) who did not hesitate to say that too many cases of mute rabies were being mistaken for black tongue. I want to advise you for the benefit of the protection of the public to continue to give your good advice—the differential diagnosis is too important. If the case is black tongue, no harm is done. On the other hand, if you, through mistaken diagnosis, turn a case of rabies on the public, a serious mistake has been made."

Miscellaneous

The Closing Hours of a Great Physician.

The great physician Boerhaave lay on his deathbed. The hour of his release was drawing nigh. The city for which he had done so much had once before feared that his end might be near, and had celebrated his restoration to health with universal manifestations of joy. But now Leyden stood in the shadow of a great sorrow.

Four of his most intimate friends and disciples, one of whom he had selected as his successor, stood around the bed, their hearts filled with dismay and grief. Their master, however, preserved the calmness which his virtuous life had made natural to him.

"I feel it, my dear friends. I have completed the earthly course designed for me. What I have been able to do for the well-being of my fellow men, all now presents itself clearly before my mind. My heart does not reproach me at all. How sweet to me is this assurance, how far it rises above the idle approbation of men! You, my disciples, make yourselves worthy of the respect and gratitude of your fellow men. By so doing you will best be able to bear it, in case you do not find respect and gratitude where you had expected them. Accustom yourselves to be superior to the world's gratitude; for duty will often demand of you that you be not disturbed at the feelings of the multitude, even though favors are bestowed because of popular feeling. Teach yourselves always to be strict judges of yourselves, and in order that your conscience may always keep watch over you to secure this, cultivate a character independent of the applause and the censure of men.

"Do not take ingratitude too much to heart, as even this has a sweetness unknown to most; for the happy feeling that no ingratitude is able to destroy in our heart the kindly love for our fellow creatures is, beyond all computation, a greater satisfaction than is gained from any expressions of thanks.

"Never let the life of the rich and the powerful have more worth in your eyes than that of the poor and lowly. Do not be satisfied with merely doing good yourselves, but use all the influence of your profession in order to make others love what is good.

"Whenever duty calls, a brave physician knows how to defy hatred, danger, infection, yea, even death itself. Is he perhaps accused? Then, as a noble-hearted man, he finds in the fulfilment of his duties and in the self-sacrifice that these entail, his greatest and only satisfaction. The unfeeling man deserves our pity: the true physician is raised far above any such lack of feeling. In short, my friends, live so that, whenever the time comes for you to pay the debt of nature and you look back upon your career, you may nowhere meet anything to disturb your tranquillity. Your last words can then be expressions of gratitude to the sovereign of life and death, and utterances befitting a virtuous peace of mind."

Animated by these feelings the great Boerhaave left all that was dear to him here below.

Translated from the Dutch of Kesteloot by Addison Hogue, Washington, D. C., and offered as a small tribute of gratitude to a noble physician who exemplified in his life of service and in his modest Christian character the virtues spoken of above: Dr. Robert Glasgow, of Lexington, Va.

Respirators for Protection Against Poisonous Sprays.

Surgeon General H. S. Cumming, of the U. S. Public Health Service, has recently announced (*Public Health Bulletin* No. 177) the results of an investigation undertaken at the request of a committee appointed by the National Safety Council. This investigation has been made by the United States Bureau of Mines and the National Safety Council in cooperation with the United States Public Health Service to determine the value of repirators as a means of protection from the hazard of spray painting resulting from exposure to lead, benzol, and silica. The specific questions proposed by the National Safety Council to be answered were as follows:

1. What filtering material, if any, is adequate:

(a) To reduce the lead content of the air to which a spray coater is exposed from 200 milligrams per cubic meter to 0.6 milligram per cubic meter?

(b) To reduce the amount of benzol under similar conditions from 2,000 to 75 parts per million?

(c) To reduce the number of silica particles under similar conditions from 200,000,000 to

100,000 per cubic meter as determined by the Palmer method?

2. How long would such a layer function?

3. How do certain typical masks now available measure up to this standard?

The concentrations stated above for lead and benzol should not be construed as being those to which spray painters are commonly exposed. They represent more nearly the high concentrations which can quickly cause sickness and are to be considered as extremes.

It may be stated, as a result of the tests, that in general the respirators with cotton, paper, or fabric filters remove 90 per cent or more of the lead from air carrying paint mist. These respirators restrain none of the solvent vapors, however; but the addition of a canister or cartridge of activated charcoal to the respirator removes all solvent vapors until the charcoal becomes saturated.

The useful life of filters is determined by their increase in resistance, which necessitates changing for fresh filters at intervals of several hours. When charcoal is saturated, the cartridge must be exchanged for a fresh one. Canisters of the size used with gas masks may last for weeks before a change is necessary.

The respirators were somewhat less efficient against the silica dust sprays, but they restrained 24 per cent or more of the dust from the air passed through them; most of them were more than 50 per cent efficient.

Roentgenology

Roentgen-Ray Diagnosis.

LEOPOLD JACHES, M. D., Radiologist, Mt. Sinai Hospital, New York City.

(*Continued from page* 422)

Urinary Tract

In the urinary tract the roentgen-ray not only enables one to demonstrate the size, shape and position of the kidneys, but also the presence, shape, size, number and location of calculi. It also enables one to follow the descent of the calculus. With the aid of opaque catheters it is possible to identify concretions as urinary calculi or extra-urinary bodies, and with opaque solutions injected into renal pelvis and calices, into the ureter or into the bladder, they assist one in demonstrating radiotransparent calculi, hydronephrosis or pyonephrosis, polycystic, horseshoe or fused kidney, tumors, malformations of kidney, perinephric abscess, kinks, dilatations (hydro-ureter), constrictions, and diverticula or other lesions of the ureter, including double ureters and renal pelves. Injection of opaque solutions, occasionally of air, into the bladder will help demonstrate enlargement of the prostate, tumor of the bladder wall, or diverticula.

Dependable roentgenograms of the urinary tract must include the last two or three ribs, the entire width of the abdomen and pelvis, and an area at least 1 inch below the inferior border of the symphysis pubis. Both ischial tuberosities should also be seen. Its quality must be such as to demonstrate clearly both kidneys (sometimes gas in the colon may obscure one or both), the edges of the psoas muscles, and the transverse processes of the lumbar vertebrae.

The demonstrability of the calculus depends on its chemical composition. Calculi containing calcium, and the cystine stones show very clearly, the pure urates not at all. Fortunately the latter occur most frequently in the bladder (about 60 per cent), where they can be diagnosed by the cystoscope, less frequently in the ureters (about 10 or 12 per cent), and very rarely in the kidney (about 5 per cent).

When interpreting the roentgenograms, one must bear in mind that substances other than urinary calculi may cast suspicious shadows which should not be mistaken for calculi. Of such extra-urinary shadows reported in the literature, the following are perhaps the most frequent: phleboliths; barium residue in the appendix or other parts of the gastro-intestinal tract; foreign bodies; gall-stones, especially when solitary; calcified mesenteric glands, which, as a rule, are reticulated and can thus be differentiated from calculi; calcifications in tuberculous or carcinomatous kidneys; imspissated pus; calcification of the tip of the transverse process of one of the lumbar vertebrae; compact islands in the sacrum or ilium; sclerosis of the iliac arteries; calcifications in a myoma, and dermoid cyst. These require considerable experience in reading roentgenograms for differentiation from calculi.

The body surface of the patient, especially the back, ought to be carefully inspected at the time of the examination, so as to avoid mistaking for calculi the following, which often cast dense shadows: warts and pigmented moles; scabs on a wound, especially when some metallic paste has been applied to it; scars of former operations, and adhesive plaster, es-

pecially when folded. Intestinal contents can be eliminated by a re-examination after more thorough catharsis and the cessation of metallic medication.

A new source of error which will plague the roentgenologist in the near future is the iodized oil introduced into the fallopian tubes, where it apparently will remain forever. Cases have been seen in which it remained for many months.

Thoracic Viscera

In the thoracic viscera a combination of fluoroscopy and roentgenography will produce the best results. In cardiovascular diseases the former gives more valuable information; in diseases of the lungs, especially early tuberculosis, the film is superior, for it reveals fine detail in the lung picture that cannot be observed on the screen.

In many a case the shadows cast by pathologic changes allow of more than one interpretation; the history may then be the deciding factor. The danger, of course, then is that one may be swayed too much by one's clincal conception of the case.

Important as the knowledge of the roentgenologically normal is in every part of the body, it is of much greater moment in the study of diseases of the chest. Here changes in structure begin to occur almost at birth and continue through to the end. In addition to age, occupation plays a great part as well as previous diseases affecting lungs and circulatory apparatus. Sex plays a part in that the female breast will make the normal bases appear fairly dense.

True, all these changes, whether due to age, occupation or previous disease, are pathologic in the strict anatomic sense, but clinically they may have no significance and have no bearing on the patient's present condition.

Knowing, then, that the lungs of a person at 50 have undergone certain changes which were not present at 25, or that the lungs of an iron-worker, a coal-miner or a marble-cutter may develop certain fibrotic changes as the result of the inhalation of dust particles, one would not rashly conclude that the lung markings or the hilum shadows denote, for instance, tuberculous lesions, but are merely the normal or the usual condition for the particular patient. Furthermore, the knowledge that the lung markings pictured on the roentgenogram are preponderatingly due to blood vessels will guard the observer against mistaking their congestion in cardiac disease for pulmonary infiltrations.

It is also important to remember that with age the hilum shadows increase in size and density, and that the aorta, becoming atheromatous, will appear more prominent in the descending portion of its arch. How many times has this phenomenon been mistaken for an aneurysm!

Roentgen-ray shadows in the lungs cannot be accepted as "characteristic" of any given pathologic condition. We depend, frequently, more on their location than on their appearance. There are a few exceptions; early tuberculous lesions, for instance, which usually occur in the infraclavicular spaces, are generally seen as faint densities of delicate texture extending from the periphery upward. Later, when fibrosis has occurred, the fine strands become denser and more sharply defined. Such images which occur more often in the right than in the left upper lobe are definite evidence of tuberculosis. But the coarse strands which extend from the hilum outward, especially in the lower portions of the chest, are due mainly to blood vessels and should not be mistaken for pathologic in iltrations.

(To be continued)

Woman's Auxiliary, Medical Society of Virginia

DOCTOR: PLEASE CALL ATTENTION OF YOUR WIFE TO THIS DEPARTMENT.

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary and Treasurer, Cottage Toll Road, R. F. D., Norfolk, Va.

Report of the Annual Meeting of the Auxiliary to the A. M. A., Minneapolis, Minnesota, June, 1928.

The progress of the Woman's Auxiliary is indeed breath-taking, and the membership is growing by leaps and bounds. With the full membership of all our States the Auxiliary can easily become, not only the largest, but the

strongest woman's organization in the country. The full enrollment tabulated at Minneapolis was more than 10,000 members, 600 being registered at the meeting.

There are now thirty states fully organized, ten of which completed their organization within the year, while there are seven others in active process of organization, making a total of thirty-seven. The eleven remaining states will be definitely committed to our work, it is hoped, within the year.

Some of the important accomplishments of the National Auxiliary during the years 1927-1928 are:

1st: The appointment of an Advisory Committee, composed of five members of the Board of Trustees of the A. M. A. Guided by this council of eminent physicians, an ideal health program was outlined, to be presented to every club in each community providing for a health program in their year books. The Auxiliary will provide these clubs with efficient speakers on health subjects they desire to discuss, and moving picture demonstrations also will be available. While the Auxiliary is an organization that stands apart, it is through the influence of the doctors' wives as members of other organizations that dependable health programs are being provided.

2nd: The Auxiliary has carefully refrained from every kind of political activity.

3rd: Health films, endorsed by the A. M. A., were presented before the National Conference of the Y. W. C. A. at Sacramento, California.

4th: The Auxiliary has the assurance of the President of the National Parent-Teachers' Association that the doctors' wives will be asked to co-operate and serve on their health programs.

5th: The work of the Auxiliary was presented in an address before the Woman's Club of Chautauqua, N. Y., representing every section of the United States.

6th: Health films, endorsed by the A. M. A., were presented on the program of the federation of Women's Clubs.

7th: The work of the Auxiliary has been officially endorsed by the President of the Junior League of America.

8th: The American Child Health Association has assured the Auxiliary of its full and active co-operation.

9th: The American Public Health Association has offered its assistance in providing health exhibits whenever needed.

10th: The Auxiliary has succeeded in placing *Hygeia* in the hands of legislators, in parlor cars, in libraries and in schools. There is a prize of a trip to Europe or an automobile for the first 1,000 *Hygeia* subscriptions.

In the report of the Board of Trustees of the A. M. A. the following was written of the Auxiliary:

"The Woman's Auxiliary has been very helpful, especially in the circulation of *Hygeia*. The Board of Trustees makes grateful acknowledgment of the aid received from this source."

The individual states have accomplished a tremendous amount of individual work. A few of the outstanding achievements are as follows:

New Jersey in one year's time attained 100 per cent in organization.

The Auxiliary in Kentucky published one entire issue of the State Medical Journal.

South Carolina Auxiliaries have almost realized their hope of a monument to J. Marion Sims, father of gynecology.

Illinois entertained the National Executive Board, and at the state meeting, held in Chicago, the National President was the guest of honor at a luncheon for 300 guests.

Missouri won the *Hygeia* prize, having secured more than 1,000 subscriptions.

Pennsylvania has concentrated in helping the physicians with their Pension Fund for aged and disabled physicians.

Mississippi made thousands of garments for flood sufferers.

Georgia Auxiliaries have a splendid plan whereby co-operating with the profession, all members are given thorough physical examinations.

Minnesota is raising money to provide a Medical Student's Loan Fund.

Texas has emphasized the health films before all the organizations in the state. Texas also published the "New Year" Journal of 10,000 copies.

These are only a few of the achievements. The Auxiliary as a whole has made a distinct advance during the year.

Respectfully submitted,

(Miss) Alice Leigh,
Delegate.

Proposed Revision of the Constitution and By-Laws for the Medical Society of Virginia.

To the Members of the Medical Society of Virginia:

The Committee appointed at the last annual meeting of the Society to revise the Constitution and By-Laws, submits herewith the appended report.

Each Component Society in the State was requested to forward suggestions of any changes desired, and a number of these have been incorporated in the Committee's completed work.

The basic idea in the changes now presented has been, while guarding the best interests of organized Medicine and Scientific Research, to make the organization and operation of the Society more democratic, and thus further enlarge its service and increase the opportunities of its individual membership.

Special attention has been given likewise to the Medical Defense of Members, and it is hoped that the limitations imposed, will render this dangerous feature a benefit to those who may require its aid.

The thanks of this Committee are due the former Committee on Revision for its valuable assistance in their last report, and to all members of the Society who have made suggestions to these proposed amendments.

Respectfully submitted,
J. Allison Hodges,
J. Bolling Jones,
Charles R. Grandy,
Committee.

October, 1928.

CONSTITUTION

Article I—Title

The name of this organization shall be the Medical Society of Virginia. The words "the Society" in this constitution and its By-Laws shall be construed to mean "the Medical Society of Virginia."

Article II—Purposes

The purposes of the Society are to promote the science and art of medicine, the protection of public health, and the betterment of the medical profession.

Article III—Component Societies

The State of Virginia shall be divided into component medical societies of one or more counties. The constitution and by-laws of these societies shall be in conformity with those of the State Society, and the principles of Medical Ethics of the American Medical Association shall govern the members.

Article IV—Composition of the Society

White physicians in Virginia, not practicing sectarian medicine, members of a component society, are eligible to active membership. Provision may be made for associate membership.

Article V—House of Delegates

The House of Delegates shall be the business and legislative body of the Society, and its membership shall consist of the delegates elected by the component societies, the President, the President-elect, and the ten members of the Executive Council. The Executive Secretary-Treasurer of the Society shall be an ex-officio member.

A report of the transactions of the House of Delegates shall be received at a general meeting of the Society before the close of the annual session. The Society may either ratify the report as a whole or refuse ratification of any section, but to overrule any action of the House of Delegates a two-thirds majority vote by a ballot of at least one hundred members must be recorded.

Article VI—Council

The Council shall have charge of the business affairs of the Society when the House of Delegates is not in session, and shall prepare and present a budget for the ensuing year to the House of Delegates at its first session. The council shall consist of one member from each Congressional district of the State, together with the President and President-elect. The Executive Secretary-Treasurer of the Society shall be an ex-officio member of the Council.

Article VII—Officers

The officers of the Society shall be a President, a President-elect, who shall succeed to the Presidency at the end of the term, three Vice-Presidents, and an Executive Secretary-Treasurer. The office of the Executive Secretary-Treasurer may be held by a non-member.

The officers shall be elected during the annual session of the House of Delegates, and will begin service at the adjournment of the annual session and continue until the end of the term, or until a successor qualifies. The term of office shall be for one year.

Article VIII—Standing Committees

The Standing Committees of the Society shall be: (1) Scientific Work and Clinics, (2) Legislation and Public Health, (3) Publication and Program, (4) Medical Defense, (5) Medical Education and Hospitals, (6) Membership, and (7) Ethics.

Article IX—Annual Session

There shall be an annual session of the So-

ciety and the date and place of the meeting shall be determined by the House of Delegates.

Article X—Funds

Funds for the Society may be raised by a per capita assessment, voluntary contributions and other business activities. The funds shall be expended to carry out the general purposes of the Society.

Article XI—Seal

The Society shall have a seal bearing date of organization of the Society. The power to change or renew the seal shall rest with the House of Delegates.

Article XII—By-Laws

The Society may adopt by-laws not in conflict with this Constitution.

Article XIII—Amendments

This Constitution may be amended at an annual session by a two-thirds vote of the House of Delegates, and ratified by the general meeting, provided such amendment is previously published in the official publication of the Society, at least a month before the annual meeting. All previous constitutions of the Society are repealed when this constitution is adopted and put into effect.

Article XIV—When in Force

This Constitution as revised shall be in force upon its adoption by the House of Delegates, and ratification by a general meeting of the Society.

BY-LAWS

Article I—Membership in the Society

Section. 1—Members of the Society are classified as active and associate. Active membership is based upon membership in a component society.

The active members of the Society shall be those who are members in good standing in component societies and those not members of component societies but members of this Society in good standing at the time of the adoption of these By-Laws. All others not members of a component society shall constitute the associate membership.

Active members, who move out of the State, become associate members of the Society. Teachers of sciences allied to medicine and medical officers of the Army, Navy and Public Health Service, temporarily stationed in Virginia, may be elected to associate membership through component societies, or by the House of Delegates upon recommendation of the Membership Committee. Associate members may resign membership by giving notice to the Executive Secretary-Treasurer, or, on recommendation of the Ethics Committee, be suspended or expelled by the House of Delegates for sufficient cause. Any associate member, eligible to membership in a component society, may be required by the Council to make application for membership in such component society.

Section 2.—No one shall be enrolled as an active or associate member of this Society until the Executive Secretary-Treasurer has received his or her prorated annual dues.

Section 3.—The privileges of voting, holding office, and serving on committees is limited to the active membership. In all other respects the status of the active and associate members is the same.

Section 4.—For long, faithful or distinguished service, the House of Delegates, upon recommendation of the Membership Committee, may elect annually two resident members and one non-resident physician to honorary, active or associate membership.

Section 5.—Every member, after verification of good standing from the rolls, shall register and be given a membership badge before taking part in any of the proceedings of the annual session. All badges shall be furnished by the Society.

Section 6.—Each member shall be given a certificate membership card upon payment of his first annual assessment.

Article II—Component Societies

Section 1.—The component societies shall be those holding charters from the Society. All component county societies holding charters at the time of the adoption of these By-Laws will retain such charters as component societies.

Section 2.—There shall be only one component society in a county. A component society may embrace one or more counties. The name of a component society must in some way suggest its locality. Should it seem desirable that a county unite with a county or counties in an adjoining congressional district, as a component organization, such action may be taken provided it be sanctioned by the councilor from each of the districts concerned. Such component organization shall be deemed

to be in the jurisdiction of the councilor of the district in which the majority of the membership resides.

Section 3.—The Council shall endeavor to organize into component societies all the counties of the State. At each annual meeting the Council shall report to the House of Delegates the unorganized counties and recommend a plan for organizing each of such counties into a component society. The House of Delegates may direct the Council to make further effort to organize such a county or it may assign an unorganized county to a nearby component society. Such assignment can not be made to a component society unless agreed to by the representatives of that component society in the House of Delegates.

Section 4.—A component society consisting of two or more counties may upon petition to the Council be divided and given separate charters, if the Council is of the opinion that such division is in the interest of medical organizaton.

Section 5.—Each component society shall judge the qualification of its own members.

Section 6.—A component society shall drop from its roll a member whose license to practice medicine in the State has been revoked or whose membership in the State Society has been lost for non-payment of dues.

Section 7.—A member expelled by the component society can appeal to the State Society through the Ethics Committee.

Section 8—A member may join a more convenient component society in an adjoining county, provided the component society of the county in which such member resides gives its consent.

Section 9.—A member moving from a county of one component society to the county of another may secure a certificate of transfer in applying for membership in the component society to which such member is moving. Pending acceptance or rejection of such application, membership may be retained in the original component society for a period not to exceed one year.

Section 10.—Each component society shall send to each annual meeting of the Society, its number of delegates and alternates fixed by Article IV, Section 2 of the by-laws.

Section 11.—The Secretary of each component society shall keep a roster of its members, including name, address, year of graduation, college, date of State license, and such other information as may be desired by the Society. Once a year, not later than July the 1st, the secretary of each component society shall send a list of its members to the Executive Secretary-Treasurer of the State Society.

Section 12.—Each component society shall appoint one member as an auxiliary to the committee on Legislation and Public Health, to co-operate with that committee in its legislative and other work.

Section 13.—The component societies shall co-operate with the officers of the State Society to carry out the plans, laws and purposes of this organization.

Article III—General Meetings

Section 1.—The general meetings of the Society are open to all registered members and guests.

Section 2.—At each annual meeting there shall be an address by the President and not more than two orations by invited guests.

Section 3.—With the exception of the address by the President and invited guests, no address, paper, or other contributions on the program shall be longer than fifteen minutes.

Section 4.—No one shall discuss a paper more than once and then for only five minutes, except the leader of the discussion of a selected symposium who may be allowed a maximum of ten minutes.

Section 5.—No contribution shall appear on the program unless the title is sent to the Executive Secretary-Treasurer at least five weeks before the annual session, and only then when endorsed by the Program Committee. No member may present more than one paper at an annual session.

Section 6.—If the author is not present when a paper is called, it shall be placed at the end of that section of the program. An author who has been absent twice without having submitted a typewritten paper to the secretary for publication shall be debarred from the program for two (2) years.

Section 7.—All papers and contributions are the property of the Society and cannot be published first without the consent of the Publication Committee.

Section 8.—The scientific work of the Society may be divided into two or more sections.

Section 9.—In a general meeting, after the program of a section is completed and before the House of Delegates adjourns, a member

may initiate any business matter not previously considered in the House of Delegates, to be acted upon by that body, provided a quorum of fifty (50) members be present in the general meeting.

Section 10.—A rule governing the program or conduct of a general meeting may be changed only by a two-thirds vote of the members present.

Article IV—House of Delegates

Section 1.—The first assembly of the House of Delegates shall be held on the first day named for the annual session and subsequent meetings shall be held as necessary.

Section 2.—Each component society shall elect annually to membership in the House of Delegates, one delegate and one alternate for each thirty-five (35) members or major fraction thereof, or as the component society may elect, one delegate and one alternate from each county in such component society. In any event, each component society is entitled to at least one delegate and one alternate in the House of Delegates.

Section 3.—Thirty delegates representing at least ten component societies shall constitute a quorum of the House of Delegates.

Section 4.—The President shall preside over the meetings of the House of Delegates. The Executive Secretary-Treasurer shall be the Secretary.

Section 5.—If the eligibility of any member is questioned, the president may appoint a committee on credentials to report on such member or refer the case to the Committee on Ethics.

Section 6.—The House of Delegates shall elect officers of this Society as provided for in Article V of the By-Laws.

Section 7.—The House of Delegates shall elect delegates and alternates to the House of Delegates of the American Medical Association in accordance with the constitution and by-laws of that organization. Such delegates shall be elected by ballot, and each member will be allowed to vote for as many of the nominees on the ballot as there are delegates and alternates to be elected. Those receiving the highest votes will be declared elected as delegates and those receiving the next highest votes will be declared elected as alternates.

Section 8.—The House of Delegates shall nominate to the Governor of Virginia at the proper time in accordance with the laws of Virginia, members of the State Board of Medical Examiners.

Section 9.—The House of Delegates, at each annual session, shall have authority to approve, modify or reject the budget recommendations presented by the Council for the ensuing fiscal year. In case a budget is not presented by the Council, the House of Delegates shall have authority to prepare the budget.

Section 10.—The House of Delegates may revoke the charter of a component society for violation of the laws of the Society.

Section 11.—The House of Delegates may appoint special committees from its own membership or from the membership of the Society.

Section 12.—The Executive Secretary-Treasurer shall make a complete yearly report to the House of Delegates at each annual session.

Section 13.—All officers and delegates elected, all nominations made to the Governor and a summary of all other business transacted by the House of Delegates shall be reported to the Society at a general meeting before the close of the annual session, in accordance with Article V of the Constitution.

Article V.—Election of Officers

Section 1.—The House of Delegates, at its first meeting, shall elect from its membership a Committee on Nominations, consisting of one member from each Congressional District. This Committee shall report to the House of Delegates the result of its deliberations in the form of a ticket containing the names of one or more members for each of the offices to be filled at the annual session. Nothing in this section shall be construed to prevent additional nominations being made from the floor by members of the House of Delegates. The election of officers shall be by ballot and a majority vote is necessary for election. The lowest nominee will be dropped on each ballot until one receives a majority vote. In case of a tie, the president shall cast the deciding vote.

Section 2.—Only active members in good standing are eligible to office.

Section 3.—The House of Delegates shall at each annual session elect a President-elect for a term of one year. No member of the Society who lives in the city or county in which the Society is holding its session shall be eligible to election to the office of President-elect for the succeeding year. At the end of this term,

the President-elect shall automatically become President for a term of one year.

Section 4.—The House of Delegates at each annual session shall elect three (3) vice-presidents to rank accordingly, these to represent the various sections of the state.

Section 5.—The House of Delegates shall at each annual session elect an Executive Secretary-Treasurer for a term of one year.

Section 6.—The House of Delegates, at each annual session, upon nomination of delegates from each district, shall elect, for a term of two years, councilors from the odd numbered Congressional Districts on the odd years and from the even numbered Congressional Districts on the even years. At this time the House of Delegates shall also fill any vacancy in the membership of the Council.

Section 7.—In case there is a vacancy in the office of President-elect, or in case the President-elect was appointed pro tempore by the Council, the House of Delegates at the annual session shall also elect a President for the following term.

Article VI—Duties of Officers

A. *President*

Section 1.—The President shall be the executive head of the Society.

Section 2.—The President shall be the presiding officer at the general meetings of the Society, president of the House of Delegates, chairman of the Council, and ex-officio member of all committees. The President shall vote in the general meetings, in the House of Delegates, and in the Council only in the case of a tie. If the President or the President-elect cannot be present, a Vice-president shall preside over the general meeting, the House of Delegates, the Council or special scientific sections.

Section 3.—The President shall deliver the annual oration and shall have the privilege of inviting as many as two orators at the annual session.

Section 4.—The President shall fill any vacancy occurring between annual sessions in the Council, delegates to the American Medical Association, and standing committees, and such appointments shall be valid until the end of the next annual session. He shall appoint any necessary special committees at the time he takes office, or during the year.

Section 5.—The President, in conjunction with the Committee on Publication and Program, shall prepare the annual scientific programs.

Section 6.—The President shall visit as many of the component societies of the State Society as possible during the year, in the interest of the Society, actual expenses incurred being paid in accordance with budget determined upon by the House of Delegates.

B. *President-Elect.*

Section 7.—The President-elect shall be an ex-officio member of the House of Delegates and an ex-officio member of the Council. The President-elect shall act for the President in his absence or disability, and shall automatically succeed to the presidency at the end of the term.

Section 8.—The President-elect, at the annual session when he assumes the office of President, shall appoint one member in place of the retiring member on each standing committee and shall name the chairmen of the standing committees for the ensuing year. Announcement of these names shall be made at the general meeting when he assumes office.

C. *Vice-Presidents.*

Section 9.—The Vice-presidents shall assist the President in the discharge of his duties and the Councilors in their districts in the organization of component societies. In event of the death or resignation of the President, a Vice-president, according to rank, shall succeed him for the remainder of his term of office.

D. *Executive Secretary-Treasurer.*

Section 10.—The Executive Secretary-Treasurer of the Society shall be the executive agent of the Society, the secretary of the general meetings, secretary of the House of Delegates, secretary of the Council, and general manager of the official publication of the Society.

Section 11.—The Executive Secretary-Treasurer shall be the custodian of all property of the Society, provide for registration of members at general meetings, keep a card index of members, conduct the general correspondence of the Society and, with the consent of the President, employ necessary assistance.

Section 12.—The Executive Secretary-Treasurer shall collect all money due the Society and pay out these funds upon written order of the President, or upon his designated authority. The Executive Secretary-Treasurer shall be bonded as approved by the Council.

Section 13.—The Executive Secretary-Treasurer shall mail notices to members two months before the annual session asking for papers and shall, under the direction of the Publication and Program Committee prepare and send to each member a program of the annual session.

Section 14.—The Executive Secretary-Treasurer shall make a complete yearly report to the House of Delegates, at each annual session.

Article VII—Council

Section 1.—The Council shall consist of the President, President-elect and one member from each Congressional District. The Council shall be the executive and finance committee of the House of Delegates and shall have charge of the business affairs of the Society when the House of Delegates is not in session. The President shall be the chairman of the Council and the Executive Secretary-Treasurer shall be its secretary.

Section 2.—Each councilor shall be the organizer, peacemaker and censor for his district. A councilor shall visit each component society in his district once a year.

Section 3.—Four members of the Council together with the President or President-elect shall make a quorum. Actual expenses may be paid members attending meetings of the Council in the interim between the annual sessions.

Section 4.—At each annual session, the Council shall present a budget for the next fiscal year, based on the expected income and expenditures during this period, which budget shall be presented to the House of Delegates for its approval.

Section 5.—The Council shall be charged with the duty of organizing the whole state into component societies, and, at each annual session, shall report on this work to the House of Delegates, with recommendations. The Council shall recommend to the House of Delegates the revocation of a charter of a component society when such component society flagrantly violates the rules of the Society.

Section 6.—The Council shall provide offices for the Society headquarters.

Section 7.—The Council shall make diligent efforts to collect past due per capita assessments.

Article VIII—Standing Committees

The Standing Committees of the Society shall be as follows:

1. Scientific Work and Clinics,
2. Legislation and Public Health,
3. Publication and Program,
4. Medical Defense,
5. Medical Education and Hospitals,
6. Membership, and
7. Ethics.

Each of these Committees shall consist of five members and the President, ex-officio. The members of the Standing Committees for the first year shall be appointed for one, two, three, four and five years by the President and President-elect, and thereafter the President-elect shall appoint to fill vacancies created by expiration of term of office. No member may serve on more than one standing committee the same year.

All committees shall make reports annually to the House of Delegates. The chairman of all standing or special committees not members of the House of Delegates, shall have the privilege of the floor when reporting to the House or in any incidental discussions.

Actual expenses of members of such committees required to do official work in the interim between annual sessions may be paid upon the recommendation of the chairman of such committees and the endorsement of the president, if presented within thirty days after the meeting, provided budget allowance be made for such purpose in accordance with Art. VII, Section 4.

Scientific Work and Clinics

Section 1.—The Committee on Scientific Work and Clinics shall have charge of the scientific exhibits and clinics for the annual sessions, in co-operation with the President. This committee shall endeavor to stimulate interest in scientific and research work among the members of the Society, and may institute appropriate methods to this end.

Legislation and Public Health

Section 2.—The Committee on Legislation and Public Health shall endeavor to secure and enforce legislation in the interest of public health and scientific medicine. This committee shall co-operate with like committees from the component societies, in accordance with resolutions adopted at Norfolk meeting in 1926.

Publication and Program

Section 3.—The Committee on Publication and Program shall conduct the affairs of the

official publication of the Society in accordance with the expressed policy and adopted budget of the Society. Its chairman shall be Editor of the official publication of the Society. This Committee shall also have charge of the preparation of the annual program.

Medical Defense

Section 4.—The Committee on Medical Defense shall represent the Society in suits against members for alleged civil malpractice, provided members so sued shall appeal to the Society for assistance. The work of this committee shall be in accordance with Article IX of the By-Laws on Medical Defense.

Medical Education and Hospitals

Section 5.—The Committee on Medical Education and Hospitals shall endeavor to bring about co-operation of the Society with the medical schools and hospitals of the State, in order to maintain the best standards in these institutions and thereby assist in the growth and development of medical science in the State.

Membership

Section 6.—The Committee on Membership shall pass upon the applications for membership of those not members of a component society and make recommendations for honorary membership. The Committee shall also, through co-operation with component societies and the Eecutive Secretary-Treasurer, prepare proper obituaries for deceased members.

Ethics

Section 7.—The Committee on Ethics shall consider all matters involving ethics and conduct of members on appeal from the component societies and may act independently in cases not under the jurisdiction of a component society.

All charges against any member shall be in writing, specifically stated, and signed by the accuser. The individual accused and under investigation shall be entitled to a personal hearing or representation. No charge against a member shall be heard by the Society or the House of Delegates, unless it has first been referred to the Committee on Ethics. No case shall be considered by the Committee unless there be present three-fifths of its members.

No motion or discussion of expulsion, suspension or other censure of any member shall be allowed unless such member shall have been given two months' notice through the Committee on Ethics. The committee shall make its report to the House of Delegates at the first meeting during the annual session.

No member shall be expelled from the State Society except by a vote of three-fourths of the members of the House of Delegates present. Should the member come forward within twelve months succeeding his or her expulsion and offer satisfactory explanation, he or she may be reinstated, provided three-fourths of those present in the House of Delegates concur.

ARTICLE IX—MEDICAL DEFENSE

Section 1.—Active members of the Medical Society of Virginia are entitled, subject to the conditions and limitations hereinafter specified, to aid from the Society in defending themselves against unwarranted claims based on alleged civil malpractice, but with no indemnity.

Section 2.—The Executive Secretary-Treasurer of the Society shall serve as the secretary of this committee and shall supply all needed clerical assistance and shall be custodian of its records.

Section 3.—The medical defense committee or a member thereof designated by the chairman shall investigate all claims based on alleged civil malpractice referred to it by members entitled to the benefits of this by-law. If, after investigation, a claim is believed to be well founded and the interested member so requests, the chairman of the committee shall arrange with the defendant for legal aid in the conduct of the case. The committee, however, shall not assist in the defense of any criminal suit. The committee shall not assist in the defense of any claim if, in its judgment, the member was under the influence or narcotics or intoxicating liquor when the act or default constituting the alleged malpractice occurred, or if it arose out of the commission or attempted commission of any unlawful act by the physician; but the committee may, with the consent of the Council, co-operate with the member in the equitable adjustment of any such claim, having in mind the interests of the medical profession as well as of the offending member.

The medical defense committee shall diligently inquire into the circumstances surrounding each case of alleged civil malpractice coming to its notice.

Section 4.—The medical defense committee

is authorized to expend not more than three hundred dollars in the defense of any one claim, which fee shall cover the original trial and any subsequent appeals. In no event can new cases be assumed for medical defense unless there be sufficient funds in the special account to warrant the outlay. The interested member, however, may employ additional counsel of his own choice and at his own expense, and may otherwise contribute to the defense of the case.

Section 5.—The Society shall pay no judgments rendered or compromises effected, nor will it indemnify any member on account of any such judgment or compromise; neither shall it defend any member against any violation of law.

It is earnestly recommended that every member of the Society protect himself with liability insurance which provides the indemnity feature for alleged civil malpractice.

Section 6.—If a member applying to the medical defense committee for assistance is protected by an insurance policy indemnifying him against loss by reason of alleged civil malpractice, the committee may lend such assistance as in its judgment is advisable.

Section 7.—If the medical defense committee decides that a member who has sought its aid, is not entitled to it, the member may appeal to the Council. The judgment of the Council shall be final.

Section 8.—The Executive Secretary-Treasurer of the Medical Society of Virginia shall segregate one-fifth of each member's annual dues, or proportion thereof, for the purpose of defraying the expenses of the medical defense committee in malpractice suits.

The Executive Secretary-Treasurer shall keep a separate bank account of such funds. The Council may invest such sums as in their opinion are not needed for the checking account.

The medical defense fund shall be disbursed by the Executive Secretary-Treasurer of the Society on vouchers signed by the chairman of the Medical Defense Committee and the President of the Society.

Section 9.—Every active member of the Society in good standing whose dues are paid through December 31 of the preceding year shall be entitled to the benefits of this By-Law.

Non-resident members are not eligible to the benefits of this by-law.

No member shall be entitled to the benefits of this by-law in any case in which the cause of action arose prior to his becoming a member, or prior to the date when medical defense became effective in this Society, or while the member is under suspension or otherwise not in good standing. The estate of a deceased member shall be entitled to the same benefits under this By-Law as the member would be entitled to were he living.

Section 10.—Members entitled to and desiring the assistance of the medical defense committee shall request such assistance in writing, application being made to the Executive Secretary-Treasurer of the Society within thirty (30) days after charges have been preferred.

A member desiring or receiving assistance from the medical defense committee shall, in a written statement, promptly inform the Executive Secretary-Treasurer of all the various alleged facts, court proceedings, if any, and of the termination of the case.

Article X—Dues

Section 1.—There shall be an annual assessment of $5.00 upon each member. These dues for each calendar year shall be made in one payment and are payable before December 31 of each year. Members joining the Society after June the 30, shall be assessed $2.50 for the remainder of that fiscal year.

Resident honorary members and those otherwise exempt from the payment of dues who wish to enjoy the protection of the medical defense feature of the Society shall pay $1.00 a year.

Section 2.—The Council is charged with the duty of collecting or adjusting past due per capita assessments. A member, whose dues are twelve months in arrears, shall be dropped automatically from the rolls of the Society. For good reason the Council may excuse a member for such delinquency or may reinstate such member upon the payment of all or a part of such past due assessments.

Section 3.—Honorary members will be exempted from the payment of annual dues. Any member over seventy (70) years of age upon his request may be so exempted by the Executive Secretary-Treasurer.

Section 4.—The fiscal year of the Society shall correspond with the calendar year.

Article XI—Official Publication

The official publication of the Society shall be known as the Virginia Medical Monthly. Publication of the journal shall be under the

control of the Publication and Program Committee which shall co-operate in every way with the various committees of the Society for the good of the organization.

ARTICLE XII—ETHICS

The ethical principles governing the members of the American Medical Association shall govern the Society.

ARTICLE XIII—RULES OF ORDER

The deliberations of the Society shall be conducted in accordance with parliamentary usage as defined in Roberts Rules of Order.

ARTICLE XIV—AMENDMENTS

These By-Laws may be amended by a two-thirds vote of the House of Delegates, provided such amendment is proposed in writing and has laid on the table for at least one day. All previous By-Laws of this Society are repealed when these by-laws are adopted and put into effect.

ARTICLE XV—WHEN IN FORCE

These By-Laws shall be in force upon adoption by the House of Delegates and ratification by a general meeting of the Society.

Proceedings of Societies

Patrick-Henry County Medical Society.

At a meeting of this Society at Shackelford Hospital, Martinsville, Va., on September the 6th, Dr. G. B. Dudley, Martinsville, was elected president, and Dr. J. L. Blanton, Fieldale, was elected secretary-treasurer. Delegates and alternates were also elected to the Danville meeting. The retiring officers were Dr. R. R. Lee, of Martinsville, as president, and Dr. H. G. Hammond, also of Martinsville, secretary-treasurer.

The Mecklenburg County Medical Society

Met at Chase City, September the 7th and had one of the best meetings in sometime. Papers were presented by Dr. N. D. Bitting, of Durham, N. C., Dr. Thomas Wheeldon, Richmond, and Dr. B. S. Yancey and Dr. W. T. Dodd, of Chase City. Dr. G. Norfleet Carter, of Boydton, was elected to membership. The following officers were elected for the new year: President, Dr. C. V. Montgomery, South Hill; vice-president, Dr. George B. Barrow, Clarksville; and secretary-treasurer, Dr. A. T. Finch (re-elected), Chase City. Delegate and alternate were also elected to the Danville meeting of the State Society.

The Southwestern Virginia Medical Society

Held its semi-annual meeting in Wytheville, Va., September 27-28, Dr. J. L. Early, of Radford, presiding. The usual banquet was held on the first evening and the scientific program was excellent. Dr. A. M. Showalter, Christiansburg, was elected president for the ensuing year; Dr. Charles F. Graham, Wytheville, vice-president; and Dr. E. G. Gill, Roanoke, was re-elected secretary-treasurer of the Society. Delegates and alternates were elected from the various counties composing this Society to the Danville meeting of the Medical Society of Virginia.

The Medical Association of the Valley of Virginia

Held its Fall meeting in Saunton, September 27, under the presidency of Dr. C. O. Dearmont, of White Post. There was an interesting program of clinical case reports and especially prepared papers. At the election of officers, the following were elected for the ensuing year: President, Dr. E. R. Miller. Harrisonburg; vice-presidents, Drs. H. G. Middlekauff, Weyers Cave, and J. A. Riffe, Clifton Forge; treasurer, Dr. L. F. Hansbrough (re-elected), Front Royal; and secretary, Dr. J. F. Fulton, Staunton. Clifton Forge was selected as the place for the next meeting to be held in March, 1929.

The Southside Virginia Medical Association

Held its September meeting in Kenbridge, Va., on the 11th, with Dr. W. D. Prince, of Stony Creek, presiding. Dr. R. L. Raiford, Franklin, is secretary. The feature of the meeting was a very illuminating talk on "Pellagra" by Dr. Joseph Goldberger of the U. S. Public Health Service. This attracted a large attendance. At the close of the meeting, the Association was tendered a delightful dinner by the Lunenburg physicians.

The next meeting will be held in Petersburg on the second Tuesday in December, at which time officers for 1929 will be elected.

The Southampton County Medical Society

Met in Franklin, Va., September the 13th, with Dr. E. A. De Bordenave, of Franklin, presiding. Dr. H. G. Grant, of the State Health Department, gave an interesting talk on the State-wide campaign for the control of

diphtheria. At the election of officers which followed, Dr. James A. Grizzard, Drewryville, was elected president; Dr. R. H. Cobb, Franklin, vice-president; and Dr. W. T. McLemore, Courtland, was re-elected secretary. Delegate and alternate were selected to the Danville meeting.

The Clinch Valley Medical Society

Held its regular meeting at Appalachia, Va., on September the 28th. Dr. C. B. Bowyer, Stonega. is president, and Dr. J. C. Sutherland, Clintwood, secretary of the Society. There was an all day session which was devoted to clinics and lectures by men of recognized ability, thus giving the members of this Society a short post-graduate course covering the important branches of medicine and surgery. The invited guests included Dr. J. W. Cox, of New York City; Dr. E. L. Bishop, Nashville—Health Commissioner of Tennessee; Dr. L. A. Calkins, University of Virginia; Drs. J. Morrison Hutcheson, St. George T. Grinnan and J. P. Mauck of the Medical College of Virginia, Richmond; Dr. John W. Preston, Roanoke, President of the Medical Society of Virginia; and Dr. Roy K. Flannagan, of the State Board of Health. Following the meeting, a banquet was served to all members of the Society and their guests.

Truth About Medicine

In addition to the articles enumerated in our letter of July 27th, the following have been accepted:

Abbott Laboratories
Potassium Bismuth Tartrate with Butyn—D. R. L., 20 c.c.
Parke, Davis & Co.
Scarlet Fever Streptococcus Toxin for Skin Test—P. D. & Co.
E. R. Squibb & Sons
Ephedrine Hydrochloride—Squibb.
Swan-Myers Co.
Syrup Ephedrine Hydrochloride—Swan-Myers.

NEW AND NON-OFFICIAL REMEDIES

Petrolagar (Unsweetened).—Liquid petrolatum 65 c.c. emulsified with agar in a menstruum containing sodium benzoate 0.1 Gm., and water to make 100 c.c. Deshell Laboratories, Inc., Chicago.

Mead's Standardized Cod Liver Oil, Flavored.—Mead's standardized cod liver oil (New and Non-official Remedies, 1928, p. 253), containing 0.12 per cent of a mixture of vanillin and oil of lavender as flavoring. Mead Johnson & Co., Evansville, Ind.

Cellu Soy Bean Flour.—A partially defatted flour prepared from the soy bean, having approximately the following composition: protein, 45.5; carbohydrate, 25.5, of which less than one-half readily yields sugar; fat, 8.5; ash, 6.0; fiber, 4.7; and water, 9.5. Cellu soy bean flour may be used for preparing bread and muffins in cases in which a diet relatively free from carbohydrate is desired, as in diabetes and amylaceous dyspepsia. The Chicago Dietetic Supply House, Chicago.

Cellu Soy Crisp.—A prepared "breakfast food," made from cooked soy beans without removal of fat and having approximately the following composition: protein, 45.6; carbohydrate, 16.1, of which less than one-half readily yields sugar; fat, 20.8; ash 6.7; fiber, 6.8; and water 4.0. It may be used in cases in which a diet relatively free from carbohydrate is desired, as in diabetes and amylaceous dyspepsia. The Chicago Dietetic Supply House, Chicago.

Mead's Powdered Boilable Lactic Acid Milk.—A modified milk product prepared by adding lactic acid U. S. P. to whole milk, drying and powdering. Each 100 Gm. contains approximately protein, 26 Gm.; lactose, 36.3 Gm.; butter fat, 27.2 Gm.; free lactic acid, 3 Gm.; ash, 6 Gm., and moisture, 1.5 Gm. Mead's powdered boilable lactic acid milk is proposed for overcoming the so-called buffer action of cow's milk in the infant's stomach. Mead Johnson & Co., Evansville, Ind.

Diphtheria Toxoid.—Diphtheria Anatoxin.—The toxin of diphtheria modified by the method of Ramon. The work of G. Ramon, of the Institut Pasteur, has shown that the toxin of diphtheria may be modified by treatment with formaldehyde to reduce its toxicity and yet preserve its antigenic properties. Diphtheria toxoid is used for active immunization against diphtheria. It is administered subcutaneously.

Diphtheria Toxoid-Mulford.—Anatoxine—Ramon.—Prepared from broth cultures of diphtheria toxin, having an L + dose of 0.25 c.c. or less, diluted with physiologic solution of sodium chloride and free of serum proteins. It is marketed in packages of one immunizing treatment and in packages of ten immunizing treatments. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., August 4, 1928, p. 321).

Protein Extracts Diagnostic—P. D. & Co.—In addition to the products listed in New and Non-official Remedies, 1928, p. 42, the following have been accepted: Cotton Protein Extract Diagnostic—P. D. & Co.; Cotton Seed (Cake) Protein Extract Diagnostic—P. D. & Co.; Goat Hair Protein Extract Diagnostic—P. D. & Co.; Human Hair Protein Extract Diagnostic—P. D. & Co.; Kapok Protein Extract Diagnostic—P. D. & Co.; Peptone Protein Extract Diagnostic—P. D. & Co.; Poplar-Pollen Protein Extract Diagnostic—P. D. & Co.; Sunflower Pollen Protein Extract Diagnostic—P. D. & Co.; Sweet Vernal Grass Pollen Protein Extract Diganostic—P. D. & Co. Parke, Davis & Co., Detroit. (Jour. A. M. A., August 11, 1928, p. 397).

PROPAGANDA FOR REFORM

The Injection Treatment of Varicose Veins.—The injection treatment for the obliteration of varicose veins is attracting increasing attention. The French school, under the leadership of Sicard, has been using sodium salicylate in solutions of from 20 to 40 per cent. Linser used 20 per cent sodium chloride solution, and reported 6,000 injections. Nobile, in Germany, has made injections in 3,000 patients, with 50 per cent dextrose. Meisen uses equal parts of 25 per cent solution of sodium salicylate and 10 per cent sodium chloride. In this country, McPheet-

ers has reported favorable results with sodium salicylate. The most important consideration in connection with the injection method is the danger of pulmonary embolism. Thus far, reports of four cases of fatal pulmonary embolism seem to be available. Of these, two occurred after correct technic and therefore appear unavoidable. Against these two fatalities there are reports of 14,000 successful injections. The efficacy of the method will depend much on the proper selection of cases. Definite contraindications to the injection method include cardiac and renal disease accompanied by venous stasis and dilatation of veins, hypertonus, changes in and obliteration of the deeper veins, pregnancy, and large intrapelvic tumors. (Jour. A. M. A., August 4, 1928, p. 322).

Quinine in Malaria.—There is probably no time when the chills and fever produced by malaria may not be cured by quinine. It is probably best to follow the standard treatment as recommended in the report of the National Malaria Committee (1918). It is safe to say that chills and fever that do not respond to this treatment are not due to malaria. It has not been definitely established whether or not substandard doses of quinine tend to make the disease refractory to quinine. (Jour. A. M. A., July 21, 1928, p. 192).

Clauden Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Clauden, manufactured by Luitpold-Werk, Munich, Germany (East Brook, Inc., New York, distributor) is claimed to be a harmless, efficient and superior hemostatic for local, oral, hypodermic and intravenous administration. On the basis of the evidence presented by the manufacturer and distributor, the Council found Clauden unacceptable for New and Nonofficial Remedies because its potency and keeping qualities are not controlled; because the labels and advertising contain no caution of the possibility of anaphylactic reaction from foreign protein; and because the claims advanced for it are unwarranted. (Jour. A. M. A., April 7, 1928, p. 1116).

Kalzan Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Kalzan is the name applied to a double salt of calcium and sodium lactate manufactured by Johann A. Wulfing Chemical Works, Berlin (The Wulfing Co., Inc., New York, distributor). The product is claimed to have none of the irritating properties of calcium chloride and to possess the advantage of being more readily retained in the tissues than ordinary calcium lactate. This is claimed to be due to the presence of the sodium lactate, which is claimed to increase the alkalinity of the blood and to enhance the ability of the tissue cells to hold the absorbed lime. These claims the Council held not to be substantiated by acceptable evidence. The Council keld Kalzan unacceptable for new and Nonofficial Remedies because it is an unoriginal compound marketed under a proprietary, nondescriptive name; because the therapeutic claims advanced for it are unwarranted, and because its use is irrational and unscientific in that this double salt of calcium lactate and sodium lactate is of a lesser therapeutic value than calcium lactate alone. (Jour. A. M. A., April 7, 1928, p. 1117).

Hart's Alimentary Elixir of Beef Not Acceptable for N. N. R.—This product generally referred to in the advertising as "Hart's Elixir" is stated by E. J. Hart & Co., Ltd., to have the following composition: total solids, 20.75 per cent, total proteids (peptones, albuminoids), 2.65 per cent; carbohydrates, 12.0 per cent; alcohol, by volume, 19.5 per cent; sodium glycerophosphate, to each fluid ounce, 6 grains; potassium glycerophosphate, to each fluid ounce, 6 grains; preservatives used, alcohol and glycerin. This preparation belongs to the closs of liquid medicinal foods which the Council on Pharmacy and Chemistry has omitted from New and Nonofficial Remedies because their usefulness in present-day dietotherapy lacks substantiating evidence. It is "fortified" with glycerophosphates, which are now generally considered of little therapeutic value. It is marketed under a name which is therapeutically suggestive, with claims that are extravagant and misleading, and in a way to lead the public to depend on it for nourishment which it does not contain. The Council declared Hart's Alimentary Elixir of Beef unacceptable for New and Nonofficial Remedies. (Jour. A. M. A., April 7, 1928, p. 1117).

Epilepson.—"Epilepson", described in the advertising as an "amazing discovery" which "stops epileptic attacks at once," has been put on the market by the Epilepson Company, Inc., of Brooklyn, New York. Later the name of the concern seems to have been changed to the Remedy Products, Inc., of New York City. An examination of Epilepson in the A. M. A. Chemical Laboratory showed that it was essentially phenobarbital (luminal). (Jour. A. M. A., April 7, 1928, p. 1141).

Terpezone Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that according to the information of the Knox Terpezone Co., "Terpezone" is produced by passing a mixture of ozone and pinene vapor through a "combined chemoelectrical generator of a highly specialized nature". The Council further reports that "Terpezone" is claimed to be a pinene ozonide, but that the firm's positive statement in regard to the composition of Terpezone is not warranted. The Council reviews the evidence for the therapeutic value of treatment with "Terpezone" and finds that this is not acceptable. The Council was obliged to declare Terpezone unacceptable for New and Nonofficial Remedies because no satisfactory evidence is presented to show that Terpezone is pinene ozonide or that in the manufacture of the product the formation of injurious by-products is controlled or prevented; because the claimed harmlessness of the product is not established, and because it is marketed with unwarranted and exaggerated claims of therapeutic value. (Jour. A. M. A., April 14, 1928, p, 1197).

Use of Lens Antigen in Cataract.—The successful cure of cases of incipient cataract by the injection of lens antigen as proposed by A. E. Davis is yet to be reported. In 1924 the Council on Pharmacy and Chemistry considered the evidence available and found it insufficient to permit recognition of the product. In the six years that have elapsed since lens antigen was first proposed for use in the treatment of cataracts there has been no scientific corroboration of Davis's alleged results. (Jour. A. M. A., April 14, 1928, p. 1239.)

The Physiologic Potency of Activated Sterols.—Experiments indicate that about twenty billionths gram of vitamin D is sufficient to produce chemical deposition in a rachitic rat. It has also been reported that ten millionths gram of irradiated ergosterol daily is sufficient to promote the healing of rickets in rachitic rats. (Jour. A. M. A., April 21, 1928, p. 1295).

Annual Meeting of the Council on Pharmacy and Chemistry.—Among the questions considered, those of special interest to the medical profession were: It was decided to co-operate with the Committee of Pharmacopeial Revision in studying the activity of a digitalis preparation for hypodermic use offered for the Pharmacopeia. It was decided that unless new evidence develops, to exclude all digestive enzyme

preparations from New and Nonofficial Remedies with the close of 1929. It was decided to omit all desiccated pituitary preparations from New and Nonofficial Remedies with the close of the longest period for which any such preparation now stands accepted, unless before then new evidence for their value becomes available. The Council discussesd the available evidence for the value and rationality of a mixture of a barbital compound, marketed as such and found acceptable, with an analgesic such as amidopyrine, provided such a mixture is marketed under a name descriptive of its composition and the claims made for it are supported by acceptable evidence. The Council voted to recommend to the Board of Trustees that the distribution of New and Nonofficial Remedies to medical classes be resumed. It was decided to ask the general manager to mark distinctively in the American Medical Directory those journals which will promise to limit their advertising of proprietary medicines to those accepted for New and Nonofficial Remedies. The Council proposes to offer its co-operation with a view to examining all food preparations (except natural foods in their natural state) proposed for advertising in A. M. A. publications. The Council considered the question of the importation of non-narcotic drugs now barred by the Narcotic Drug Import and Export Act. (Jour. A. M. A., April 28, 1928, p. 1377).

Remedies for Seasickness—It has been reported that sodium nitrite is of value in the treatment of seasickness. A support of this method comes in a report that glyceryl trinitrate—which acts as a nitrite—was found to prevent and cure seasickness. (Jour. A. M. A., April 28, 1928, p. 1381).

Ethylene-Cheney.—The A. M. A. Chemical Laboratory publishes a further report on specimens of ethylene for anesthesia examined for the Council on Pharmacy and Chemistry. Its previous reports concerned the products of the Ohio Chemical and Manufacturing Co., Kansas City Oxygen Gas Co., and Certified Laboratory Products Co. These products were found of good quality and have been accepted for New and Non-official Remedies. The present report is on the ethylene for anesthesia of The Cheney Chemical Co., Cleveland, Ohio. The first specimens were found to contain some acetylene. When the Laboratory's findings were sent to the manufacturer, the firm took steps to supply a product which should be free from acetylene and submitted a specimen that was free from acetylene and complied with the New and Non-official Remedies standards for ethylene for anesthesia. (Jour. A. M. A., May 5, 1928, p. 1444).

The Cunningham "Tank Treatment."—Dr. Orval J. Cunningham, of Kansas City, Mo., has been treating certain pathologic conditions by means of compressed air over a period of some years. In Kansas City he has constructed a cylindrical tank about ten feet in diameter and nearly ninety feet in length. The tank is said to be equipped with air lock, toilets, shower baths, compartments, and Pullman car equipment. Newspapers report that a tank is to be constructed in Cleveland. Advertisement for a concern that was to operate the Cunningham "treatment" in California, declared, "it now appears positively proven that syphilis, pernicious anemia and diabetes are curable by this method. . . ." Dr. Cunningham's thesis is that diabetes mellitus, pernicious anemia, syphilis, hypertrophic arthritis and carcinoma are all due to bacteria of an anaerobic type. He holds, further, that the oxygen content of the tissues is greatly increased when the patients are put in his compressed-air tank and that the compressed air treatment is curative in certain cases of diabetes mellitus, pernicious anemia, hypertrophic arthritis, syphilis and carcinoma. The status of the "tank treatment" is obvious; Dr. Cunningham claims unusual results for his treatment, but has published no case reports nor furnished the medical profession with any evidence to support the claims. His thesis is altogether without proof. (Jour. A. M. A., May 5, 1928, p. 1494).

Fake Cod Liver Oil Tablets in England.—In the city of Salford, England, there was sold at a large chain drug store "McCoy's Cod Liver Oil Extract Tablets." The town of Salford proceeded against the store in question, prosecuting it for selling cod liver oil tablets that were essentially misbranded. Chemical and biologic tests showed that McCoy's Cod Liver Oil Extract Tablets contained neither vitamin A nor vitamin D, and that, medicinally as a substitute for cod liver oil, the tablets were worthless. (Jour. A. M. A., May 12, 1928, p. 1575).

Armstrong's Oxycatalyst.—The Radium Research Foundation, Los Angeles, Calif., offers a treatment for cancer, the "Armstrong Oxycatalyst." The Radium Research Foundation also puts out a product known as "Radium-Sol," which is reported to be "the great gland activator and oxygenizer of the blood." This, it seems is a "patent medicine." A recent article in a California newspaper purports to be a report of an interview with Mr. Armstrong regarding the Armstrong Oxycatalyst. A second article purports to be a report of interviews with Dr. Charles M. Tinney and Stanley Boller. Dr. Tinney was reported as declaring that he had personally seen 200 to 300 cases of cancer and that only Mr. Armstrong "knows all the ingredients of the fluid." According to a report of Dr. Tinney, used in the promotion of the "Oxycatalyst," the preparation "is a radium derivative which Prof. Armstrong has combined with a catalyzer." The report takes the position that cancer is "a protein mass in which the sulphur, phosphorus and nitrogen are out of their normal valence and therefore are foreign to the general protein of the body" and that the action of Armstrong's Oxycatalyst is that of dissolving and digesting the cancer mass. While the "Oxycatalyst" is claimed to have a scientific background, it has not been submitted to the Council on Pharmacy and Chemistry for consideration. Although the use of the preparation is admitted to be in the experimental stage, there are agencies for the product and large fees are charged in certain instances for its use. Whether Mr. Armstrong's preparation is an addition to the medical armamentarium in the treatment of cancer or just another "cancer cure," is yet to be determined. (Jour. A. M. A., May 19, 1928, p. 1647).

Explosions of Ethylene.—Several ethylene explosions have been reported but only two have been fatal. The greater number of explosions have been due to elestrostatic conditions and have occurred during the winter months. Ethylene is an inflammable gas and should not be used in the presence of a cautery, open flame, or any electrical apparatus capable of producing a spark from any cause. (Jour. A. M. A., May 19, 1928, p. 1650).

Liver in Secondary Anemia.—There is clinical evidence both for and against the effectiveness of liver diet in anemias other than the pernicious type. (Jour. A. M. A., May 19, 1928, p. 1650).

Dextrose Solutions Containing Cresol. The Council on Pharmacy and Chemistry reports that it has considered a communication objecting to the acceptance for New and Non-official Remedies of solutions of dextrose (d-glucose) in ampules containing 0.1 per

cent of cresol. It was held that injection of cresol into the blood stream is the cause of many reactions which sometimes follow injection of dextrose solutions containing it. The Council concludes that the harmfulness of cresol in the amounts used in dextrose solutions has not been demonstrated. The Council decided to request manufacturers of dextrose ampules intended for intravenous use to consider the elimination of cresol as a preservative as possibly harmful. (Jour. A. M. A., May 26, 1928, p. 1711).

R. P. N. Tablets.—One of the latest humbugs in the field of epilepsy mail-order quackery is the product called "R. P. N.", put out by the Arpen Laboratories which does business from a postoffice box in Milwaukee, Wis. In the advertising that is sent out the sufferer is led to believe that, in R. P. N. Tablets there is a cure for his ailment. The A. M. A. Chemical Laboratory analyzed the preparation and concluded that each tablet is equivalent to 0.2 Gm. ammonium bromide; 0.45 Gm. of sodium bromide; 0.11 Gm. of sodium chloride, and 0.0031 Gm. of potassium bromide. From the analysis it is seen that R. P. N. Tablets belong to the old-time group of quack "epilepsy cures," consisting of mixtures of bromides. The preparation will not cure a case of epilepsy, while, indiscriminately used—as it must be—by persons who are ignorant that it contains bromides, may easily result in adding to the epileptic sufferer's condition the dangers of bromism. (Jour. A. M. A., May 26, 1928, p. 1728).

Book Announcements

A Practical Medical Dictionary. Of Words Used in Medicine with Their Derivation and Pronunciation, Including Dental, Veterinary, Chemical, Botanical, Electrical, Life Insurance and Other Special Terms; Anatomical Tables of the Titles in General Use, and Those Sanctioned by the Basle Anatomical Convention; Pharmaceutical Preparations, Official in the United States and British Pharmacopoeias and Contained in the National Formulary; and Comprehensive Lists of Synonyms. By THOMAS LATHROP STEDMAN, A. M., M. D., Editor of the "Twentieth Century Practice of Medicine"; formerly Editor of the "Medical Record", etc. TENTH, REVISED EDITION. Illustrated. New York. William Wood and Company. 1928. Octavo of 1194 pages, Flexible Leather Cover. Price $7.50.

This Dictionary is put out in good style and seems excellent in all its details. This edition contains nearly five hundred new medical terms. It has an Appendix which gives a Table of Drugs, Their Doses and Uses; Weights and Measures; Stethoscopic Abbreviations; Temperature Scales; Barometer Scales; The Chemical Elements; and Pathogenic Microparasites. In this day of changing medical words, an up-to-date Medical dictionary is one of the most necessary books for every doctor's library. We feel that we can highly recommend the volume in question.

Surgical Diagnosis in Tabular Outline. For Students and Physicians. By Dr. A. J. CEMACH, Vienna, Austria. Authorized Translation, with Addtions and Notes by EDWARD L. BORTZ, M. D., Associate in Medicine, The Lankenau Hospital, Philadelphia, Pa., Assistant Instructor in Pathology, Medical School, University of Pennsylvania. With an Introductory Note by JOHN B. DEAVER, M. D. Philadelphia. F. A. Davis Company, Publisher. 1928. Octavo with 109 Tabular Forms and 129 Plates, with 548 Subjects, Many in Colors. Cloth. Price $12.00 net.

Diseases of the Ear, Nose and Throat. Medical and Surgical. By WENDELL CHRISTOPHER PHILLIPS, M. D., Ex-President of the American Medical Association; Formerly Professor of Otology, New York Post-Graduate Medical School and Hospital; Surgeon to the Manhattan Eye, Ear and Throat Hospital, etc. SEVENTH REVISED AND ENLARGED EDITION. Philadelphia. F. A. Davis Company, Publisher. 1928. Octavo of 922 pages. Illustrated with 615 Halftone and Other Text Engravings, Many of Them Original; Including 37 Full Page Plates, Some in Colors. Cloth. Price $9.00 net.

Diseases of Infants and Children. By HENRY DWIGHT CHAPIN, A. M., M. D., Emeritus Professor of Medicine (Diseases of Children), at the New York Post-Graduate Medical School and Hospital, etc., and LAWRENCE THOMAS ROYSTER, M. D., Professor of Pediatrics and Head of the Pediatric Department, University of Virginia. SIXTH REVISED EDITION. New York. William Wood and Company. 1928. Octavo of 675 pages, profusely illustrated. Cloth. Price $7.50.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Medicine and Its Various Specialties. By Leading Members of the Medical Profession. Edited by HENRY W. CATTELL, M. D., Philadelphia, with Collaborators. Volume III. Thirty-Eighth Series, 1928. Philadelphia and London. J. B. Lippincott Company. 1928. Octavo of 310 pages. Cloth.

The New Pocket Medical Formulary. With an Appendix Containing Formulae and Doses for Hypodermic Medication; Posological Table; Obstetrical Table; Table of Apothecaries' and Metric System of Weights and Measures; Fractures, Dislocations and Sprains; Treatment of Asphyxia and Apnea; Poisons and Antidotes; Tables of Differential Diagnoses, Diet Lists for Various Diseases; The Physician's Interpreter in Four Languages, etc. By WILLIAM EDWARD FITCH, M. D., Formerly Lecturer on Surgery, Fordham University School of Medicine; Late Major, Medical Corps, U. S. A., etc. FIFTH EDITION—REVISED AND ENLARGED. Philadelphia. F. A. Davis Company, Publishers. 1928. 501 pages. Leather. Price $3.00 net.

The Rockefeller Foundation. Annual Report. 1927. The Rockefeller Foundation. 61 Broadway. New York. Paper. 385 pages.

Proceedings of a Conference on Rheumatic Diseases. Held at Bath, England, 10th and 11th of May, 1928. Published by the Hot Mineral Baths Committee of the Bath City Council. Cloth. Octavo of 292 pages.

Notes on the Buffalo-Head Dance of the Thunder Gens of the Fox Indians. By TRUMAN MICHELSON. Smithsonian Institution. Bureau of American Ethnology, Bulletin 87. United States Government Printing Office, Washington. 1928. 94 pages. Cloth.

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Editorial

Danger to Cardiopaths in the Use of Ephedrine.

Ephedrine should be used with caution in cardiac cases, if the suggestions of a recent paper by Bloedorn* and Dickins prove to be facts of clinical experience. Experience in the use of ephedrine has shown some untoward effects. Notation of harmful effects of the drug in heart cases aroused interest in the question of its effect upon the action of damaged hearts. As noted in the paper, the chief action of ephedrine seems to be to stimulate the sympathetic nervous system. On the circulatory system it is a stimulant on the cardiac accelerators. Toxic action is characterized by depressor action of the heart and a fall of blood pressure. Further, it seems to cause a marked constriction of blood vessels supplying the vasoconstrictor nerves, especially in the splanchnic area. Also, ephedrine effects an inhibition and relaxation of intestinal muscles, stimulating uterine muscles, but dilating the bronchii and pupils.

It has been noted that the rise of blood pressure in the use of ephedrine is characterized by an association of increased heart rate, and occasionally, arrhythmic heart contractions.

With this hint of physiologic effect it is well to observe that the drug is absorbed from the intestines, and will produce effect as it does when given hypodermically and intramuscularly.

Its favorable and quick action in cases of bronchial asthma and hay fever patients; its widespread advertisement; its frequent presentation in current medical publications and periodicals, have worked together to bring about a very popular adoption of the drug by practitioners and specialists. Practitioners who are called upon to treat attacks of bronchial asthma and hay fever will be interested in noting the report of the case upon which cardiac observations were made, in the paper herein referred to.

These authors have submitted the following conclusions for consideration:

1. Ephedrine is a dangerous drug in cardiopaths.
2. Extreme care should be exercised in so-called asthma cases, to differentiate bronchial asthma from "cardiac asthma".
3. Ephedrine may produce acute cardiac decompensation and pulsus alternans in patients with damaged hearts.
4. Such symptoms as palpitation, tachycardia, arrhythmia and vasomotor disturbances should be enough to cause immediate interdiction of the drug.

*A. I. Medicine, Vol. 42, No. 3, pg. 322.

Cholesterol and Senile Cataract.

In a paper on some observations of the blood chemistry in patients with senile cataract, O'Brien* and Myers point out the possible relation certain blood constituents may have in the production of cataracts. They note previous studies of Cohn in which the increase in all lipids was observed in lenses exhibiting cataractous changes. Cholesterol, lecithin and fats were increased. For instance, cholesterol shows 6.22 per cent per hundred parts of the sole residue of cataractous lenses, while in normal lenses it is only 0.62 per cent per hundred parts.

Blood chemistry was traced out along definite lines in fifty-four cases with cataract. The findings were quite valueless, except that cholesterol was increased in 54 per cent of these cases.

Ketogenic Diet in Epilepsy (Idopathic).

Medical publications for some five years have offered a suggestion as to the usefulness of the ketogenic diet in treatment of epilepsy. While many hypotheses of etiology and treatment have been advanced, this disease, with its periodic seizures, remains one of the big problems of medicine. Many remedies have been tried and found wanting. One may turn with some enthusiasm, based upon experimental data and clinical experience in this disease in the past

*Arch. Int. Med., Vol. 42, No. 3, pg. 376.

seven years, to the science of nutrition and metabolism, as suggested in recent publications.

Barbotka* draws attention to this effort to administer the ketogenic diet to epileptics and says that the success achieved justifies further use of this diet in these cases. The diet consists of a large amount of fats with a minimal amount of protein and carbohydrate. The evidence of acetone and diacetic acid in the urine of these patients is taken as a guide as to the state of ketosis. As those who have handled the diet of diabetic cases recall, ketosis is easily produced on the high fat diet unless adequate combustion of a minimal amount of carbohydrate is brought about in the patient. This state of ketosis is maintained for weeks and for years in the epileptics.

The management of this diet seems to depend upon adopting an easy method of calculating the ketogenic diet, and upon instructing the patient in the method of calculating the fat diet. The fundamental in this diet, as in diabetic diets, is to know the total energy requirements for each case. The total caloric requirements being known, certain tables are used in adapting the low carbohydrate and protein, and high fat diet to each case.

Patients are trained to calculate and prepare the diet and are instructed in the ordinary tests of urine for detecting acetone and diacetic acid. They keep a record of attacks of petit mal and grand mal. Then, if attacks continue in spite of high fat feeding, a starvation period of from seven to ten days is practiced, often with effect. No one would be so unjust to these patients and to one's self as to claim for this treatment the merits of a cure, but experience has shown that it appears to be beneficial and helpful to epileptics in lessening the severity of the attacks and in some instances in diminishing frequency, if not effecting a cure.

Toxicity of Novasurol.

Novasurol is an organic compound containing 33.9 per cent of mercury. It has a marked diuretic action and has been especially effective in removing oedema. The action is especially effective in combination with digitalis. The famous Guy's pill incorporated this combined effect. The more frequent use of novasurol by practitioners in the past few years makes any study of the toxicity of the drug interesting and important. Johnstone† and Keith have performed a real service in conducting such an inquiry. The following points are arrived at as a result of their study.

1. The toxicity of novasurol is somewhat less than that of mercuric chloride when based on the amount of pure mercury contained.

2. In the rabbit the toxicity of novasurol varies closely with the amount given per kilogram. It is important in giving it to a patient to estimate dosage on basis of weight.

3. Based on experience in the rabbit, it is suggested that repeated doses for a man weighing 70 kg. should not be larger than 2 c.c. when given intravenously.

4. Tolerance varies in rabbits and susceptibility of it in patients should be tested by small initial dosage. Salivation and toxic action may ensue unless care is exercised.

5. Repeated doses for a course should be carefully watched. Timing of doses and size of the doses should be judged with care.

Early Attendance at Danville Meeting.

The Danville meeting of the Medical Society of Virginia promises to be of unusual high quality. The President of the Society, Dr. J. W. Preston, has left no stone unturned to make this meeting of especial value to members in attendance. The president has been active throughout the year, making plans for this meeting. The committees, appointed to consummate the plans have enjoyed the full co-operation and support of the president. He has no doubt sacrificed much of his private interests in order to look after the better interests of the Medical Society of Virginia.

One particular phase of the Danville meeting has been uppermost in the mind of the president. The clinics, which are to be held on Tuesday afternoon, have had his especial concern. Through a committee of Danville doctors, Dr. J. M. Robinson, chairman, a group of clinics have been arranged. It is the hope of the president and the committee having this feature in charge, that a large attendance will greet the demonstrators and lecturers at these clincs. Physicians residing in neighboring counties and those in easy automobiling distance are urged to attend the clinics occurring in the afternoon of Tuesday.

Tuesday night will mark the opening session of the Society. On this occasion physicians and the public will be interested in the President's oration and the addresses of invited guests.

*Proceedings of Staff Meeting of the Mayo Clinic, Vol. 3, No. 36, page 273.

*Arch. Int. Med., 42, No. 2, pg. 189.

News Notes

On To Danville!

Programs of the fifty-ninth annual meeting of the Medical Society of Virginia should be in the hands of each and all members of the Society. These will give practically all information to be had about our meeting which is going to be one of the finest ever. All left to be done is for as many members as possible to fall in line and march on Danville. There is nothing which adds so largely to the success of a meeting as a large attendance and we have plenty attractions to draw you this year, so make your plans to be on hand early and stay late. Bring the ladies of your families with you.

Below we give names of all delegates and alternates whose names had been sent this office before going to press:

Delegates and Alternates

Accomack—Dr. John W. Robertson, Onancock, *Delegate;* Dr. C. E. Critcher, Temperanceville, *Alternate.*

Albemarle—Dr. Percy Harris, Scottsville, *Delegate;* Dr. T. H. Daniel, Charlottesville, *Alternate.*

Alexandria City—Dr. G. T. Klipstein, Alexandria, *Delegate;* Dr. W. W. Davies, Alexandria, *Alternate.*

Alleghany-Bath—*Alleghany County*, Dr. J. M. Emmett, Clifton Forge, *Delegate;* Dr. J. A. Riffe, Covington, *Alternate.*

Bath County—Dr. I. T. Harnbarger, Hot Springs, *Delegate;* Dr. R. A. Warren, Hot Springs, *Alternate.*

Amelia—Dr. Geo. Arhart, Amelia, *Delegate;* Dr. J. M. Habel, Jetersville, *Alternate.*

Arlington—Dr. J. H. Walton, Cherrydale, *Delegate;* Dr. Henry A. Hornthal, Potomac, *Alternate.*

Bedford—Dr. R. A. Bennett, Bedford, *Delegate;* Dr. T. P. West, Bedford, *Alternate.*

Botetourt—Dr. M. T. McCulloch, Troutville, *Delegate;* Dr. E. W. Dodd, Buchanan, *Alternate.*

Charlotte—Dr. J. R. Bailey, Keysville, *Delegate;* Dr. C. W. Tucker, Drakes Branch, *Alternate.*

Fairfax—Dr. F. M. Brooks, Fairfax, *Delegate;* Dr. Edw. McCarthy, Cherrydale, *Alternate.*

Fauquier—Dr. J. E. Knight, Bristersburg, *Delegate;* Dr. G. H. Davis, Warrenton, *Alternate.*

Floyd—Dr. J. M. Harman, Floyd, *Delegate;* Dr. J. L. Harvey, Simpsons, *Alternate.*

Halifax—Dr. J. D. Hagood, Clover, *Delegate;* Dr. H. H. Hurt, South Boston, *Alternate.*

Lee—Dr. P. D. Pence, St. Charles, *Delegate;* Dr. Geo. W. Young, Pennington Gap, *Alternate.*

Loudoun—Dr. G. Frank Simpson, Purcellville, *Delegate;* Dr. Martin B. Hiden, Warrenton and Lessburg, *Alternate.*

Lunenburg—Dr. W. D. Kendig, Kenbridge, *Delegate.*

Lynchburg and Campbell County—Dr. James Morrison, Lynchburg, *Delegate;* Dr. Jno. Walker, Lynchburg, *Alternate.*

Mecklenburg—Dr. W. W. Wilkinson, La Crosse, *Delegate;* Dr. Geo. B. Barrow, Clarksville, *Alternate.*

Medical Society of Northern Virginia—*Shenandoah County*, Dr. W. C. Ford, Woodstock, *Delegate;* Dr. R. W. Stoneburner, Edinburg, *Alternate.*

Frederick County—Dr. Hunter McGuire, Winchester, *Delegate;* Dr. H. I. Pifer, Winchester, *Alternate.*

Clarke County—Dr. C. O. Dearmont, White Post, *Delegate;* Dr. C. H. Iden, Berryville, *Alternate.*

Warren County—D. M. Kipps, Front Royal, *Delegate;* Dr. L. F. Hansbrough, Front Royal, *Alternate.*

Rappahannock County—Dr. E. W. Brown, Washington, *Delegate;* Dr. J. G. Brown, Woodville, *Alternate.*

Page County—Dr. George H. Long, Luray, *Delegate;* Dr. F. L. Smith, Stanley, *Alternate.*

Nansemond—Dr. Lewis Rawls, Suffolk, *Delegate;* Dr. O. R. Yates, Suffolk, *Alternate.*

Norfolk—Dr. Walter B. Martin, Dr. Nicholas G. Wilson, Dr. Charles R. Grandy, and Dr. P. St. L. Moncure, all of Norfolk, *Delegates.*

Northampton—Dr. S. K. Ames, Cape Charles, *Delegate;* Dr. J. M. Lynch, Cape Charles, *Alternate.*

Patrick-Henry—*Patrick County*—Dr. W. C. Akers, Stuart, *Delegate;* Dr. J. T. Shelburne, Critz, *Alternate.*

Henry County—Dr. J. M. Shackelford, Martinsville, *Delegate;* Dr. J. L. Blanton, Fieldale, *Alternate.*

Pittsylvania County and Danville—Dr. I. C. Harrison, Danville, *Delegate;* Dr. C. A. Easley, Chatham, *Alternate.*

Post-Graduate Medical Society—*Nottoway County*—Dr. J. A. B. Lowry, Crewe, *Delegate;* Dr. C. C. Tucker, Blackstone, *Alternate.*

Dinwiddie County—Dr. Wright Clarkson, Petersburg, *Delegate;* Dr. G. H. Reese, Petersburg, *Alternate.*

Prince George County—Dr. D. L. Elder, Hopewell, *Delegate;* Dr. J. M. Bailey, Hopewell, *Alternate.*

Greenesville County—Dr. B. J. Atkinson, North Emporia, *Delegate;* Dr. G. M. Naff, North Emporia, *Alternate.*

Brunswick County—Dr. W. C. Harman, Dolphin, *Delegate;* Dr. W. H. Lewis, Lawrenceville. *Alternate.*

Surry County—Dr. J. H. Parker, Dendron, *Delegate;* Dr. W. W. Seward, Surry, *Alternate.*

Sussex County—Dr. Joel Crawford, Yale, *Delegate;* Dr. T. M. Raines, Wakefield, *Alternate.*

Powhatan—Dr. J. E. Tilman, Rock Castle, *Delegate;* Dr. T. S. Hening, Jefferson, *Alternate.*

Princess Anne—Dr. H. F. Dormire, Va. Beach, *Delegate;* Dr. R. W. Woodhouse, Va. Beach, *Alternate.*

Prince Edward—Dr. J. Weldon Smith, Farmville, *Delegate;* Dr. W. A. Brumfield, Farmville, *Alternate.*

Richmond Academy of Medicine—Drs. J. A. Hodges, L. T. Price, F. M. Hodges, J. H. Smith, Stuart Michaux and A. M. Willis, Richmond: *Delegates;* Drs. J. K. Hall, T. D. Jones, W. B. Blanton, J. M. Hutcheson, A. I. Dodson and E. U. Wallerstein, Richmond, *Alternates.*

Roanoke-Franklin—Drs. T. A. Kirk and J. R. Garrett, Roanoke and W. H. Cobbs, Rocky Mount, *Delegates.*

Rockbridge—Dr. E. P. Tomkins, Lexington, *Delegate;* Dr. F. M. Leech, Lexington, *Alternate.*

Rockingham—Dr. Howard Armstrong, Harrisonburg, *Delegate;* Dr. W. A. Vaughan, *Alternate.*

Southampton—Dr. R. L. Raiford, Franklin, *Delegate;* Dr. J. A. Grizzard, Drewryville, *Alternate.*

Southwestern Virginia Medical Society—*Bland County*—Dr. A. B. Woolwine, Ceres, *Delegate.*

Washington County—Dr. F. H. Smith, Abingdon, *Delegate;* Dr. W. H. Teeter, Bristol, *Alternate.*

Smyth County—Dr. Z. V. Sherrill, Marion, *Delegate;* Dr. Robt. E. Hughes, North Holston, *Alternate.*

Wythe County—Dr. J. M. Miller, Wytheville, *Delegate;* Dr. E. M. Chitwood, Wytheville, *Alternate.*

Carroll County—Dr. C. B. Nuckolls, Hillsville, *Delegate;* Dr. W. R. Gardner, Hillsville, *Alternate.*

Grayson County—Dr. W. P. Davis, Galax, *Delegate;* Dr. J. K. Caldwell, Galax, *Alternate.*

Pulaski County—Dr. R. H. Woolling, Pulaski, *Delegate;* Dr. R. F. Thornhill, Pulaski, *Alternate.*

Montgomery County—Dr. J. L. Early, Radford, *Delegate;* Dr. J. A. Noblin, East Radford, *Alternate.*

Giles County—Dr. K. D. Graves, Pearisburg, *Delegate;* Dr. W. C. Caudill, Pearisburg, *Alternate.*

Tazewell—Dr. Isaac Peirce, Tazewell, *Delegate;* Dr. W. R. Williams, Richland, *Alternate.*

Warwick—Dr. Clarence Porter Jones, Newport News, *Delegate.*

Wise—Dr. C. B. Bowyer, Stonega, *Delegate;* Dr. B. C. Henson, Roda, *Alternate.*

Notice to Pediatricians!

Dr. William B. McIlwaine, Petersburg, Va., secretary of the Pediatric Society of Virginia, wishes to announce to all members of that Society and to all other physicians interested in the diseases and welfare of children that there will be a luncheon meeting at Hotel Burton, Danville, Va., October 17th, at 1:30 P. M.

Dr. Harvey D. Coghill, Richmond, will read a paper which will be of special interest to pediatricians and there will be a round table discussion of pediatric problems. All members are expected and others who desire are invited to be present at this meeting.

Heads Department of Surgery, Medical College of Virginia.

Dr. G. Paul LaRoque, as chairman of the committee on surgery and surgical specialties, composed of all the teachers of surgery with the rank of full professor, has been appointed head of the department of surgery at the Medical College of Virginia to fill the vacancy created recently by the resignation of Dr. Murat Willis as professor of surgery and head of that department. The appointment was effective immediately.

Assistant Chief Surgeon, N. & W. Railway.

Dr. M. A. Johnson, Jr., Roanoke, Va., has been appointed assistant chief surgeon of the Norfolk and Western Railway.

Dr. W. R. Whitman, also of Roanoke, is chief surgeon.

Dr. E. C. Harper to Enter Private Practice.

Dr. Edgar C. Harper, who has for more than four years been connected with the staff of the State Health Department as medical director of its tuberculosis out-patient department, acting as chief clinician in the field work, resigned this position early in September, and left at once for Boston, where he will take a course in cardio-vascular diseases at the Massachusetts General Hospital. When he returns to Richmond around the first of the year, he will be associated with Dr. Dean B. Cole, and will limit his work to diseases of the chest.

Prevention of Diphtheria.

Diphtheria like typhoid is a disease that may be wiped out of Virginia if means are made available for doing it. A good start was made by the State Department of Health last year with some outside funds which became available, but which cannot be continued. It is hoped that the public may be aroused to the importance of continuing the drive. Prevention which is almost absolute and it is believed permanent may be secured by the administration or toxin-antitoxin to all children.

In the drive which was made with the active co-operation of the school authorities, over 200,000 school children, or over 84 per cent of those in 91 counties of the State were immunized. The City Health Departments are also pushing the work vigorously. The result of this effort is already apparent in the vital statistics for 1927 when the deaths were reduced from 228 in 1926, to 152 in 1927, of which 117 were white and 35 colored. During the first six months of 1928, the number was reduced from 64 in 1927 to 56 in 1928.

Many of the deaths which did occur could have been prevented by prompt and adequate treatment with antitoxin, which is possible only when a physician is called in early. It is quite frequent for deaths from diphtheria to be reported with no physician in attendance at all, the families back in the mountains vainly hoping that the children are not seriously ill and that they will soon recover.

The eradication of diphtheria in Virginia may be accomplished by following up the work already so well begun, by immunization of the children not already reached. The natural immunity existing at birth disappears when the child is about six months old.

Ages for Legal Marriage in the Philippines.

Boys under sixteen years of age and girls under fourteen in the Philippines may not legally marry; before April 1, 1928, the legal ages were fourteen for boys and twelve for girls. The written consent of parent or guardian is required for the marriage of a youth under twenty or a girl under eighteen. The publication of banns or the posting of notice of application for a license to marry for ten days before the ceremony is also required by the new marriage law.

American Public Health Association.

An interesting feature of the fifty-seventh annual convention of the American Public Health Association convention, to be held in Chicago at the Stevens Hotel, October 15th to 19th, inclusive, will be an exhibit of five "traveling health departments," or railroad cars equipped so that they can be rushed to the scene of diaster or epidemic, or so that they can carry health service from a central point to isolated districts. These will be stationed on the Illinois Central terminal tracks. Automobile health equipment will be on view in Grant Park, and 200 exhibits of the most modern health apparatus will be displayed in the Stevens exhibition hall.

This year's convention will be the largest in the annals of public health history. Over 3,000 delegates will attend, including doctors, public health nurses, city and state health officers, hygienists, educators, hospital officials, sanitary engineers, and social workers. The convention has been divided into eleven main sections, covering all the chief health activities and their allied interests. Each section will be directed by an authority in that particular field. The American Child Health Association and the American Social Hygiene Association are to meet with the American Public Health Association this year.

Dr. W. R. Weisiger,

Richmond, left the last of September for New Haven, Conn., where he joined Dr. Charles T. Flynn on a motor trip to Montreal, Canada.

While away, he expected to visit clinics in Montreal, Albany and New York.

Home Accident Problem.

During the last eight months in Richmond there were twice as many deaths from accidents occurring in the home as there were caused by automobiles, and five times as many occurring in the homes as in the industrial plants.

Fatalities occurring in Richmond during the last eight months of 1928, follows:

Month	Automobile	Industrial	Home Accidents
January	2	1	6
February	0	0	2
March	4	2	7
April	3	0	4
May	2	0	4
June	3	0	2
July	0	1	6
August	4	3	2
	18	7	33

The Safety Council, as a Community Fund Agency, announces that it is attempting to eliminate home accidental deaths, as well as all other accidents, and this will be accomplished only when every citizen of Richmond is aroused to the seriousness of the problem.

The above figures may furnish food for thought for other cities besides Richmond.

"Consultation Offices" for Boys and Girls in Germany.

Information and advice on matters relating to their personal life, work, or studies are given free of charge to boys and girls at "consultation offices" which have been established by several German cities. Applicants are not even required to give their names, and all advice is considered confidential. These offices have been organized under the Federal child-welfare law of Germany. A private society in Berlin is doing similar work.

Heads Alumni Chapter.

Dr. J. Shelton Horsley was recently elected president of the Richmond Alumni Chapter of the University of Virginia.

Physical Defects in Cleveland School Children.

The bureau of physical welfare of the Cleveland Board of Education reports that examination of nearly 73,000 school children from the kindergarten and early school grades showed that at least seven out of every ten had physical defects. Nearly one-sixth were suffering from malnutrition, largely because of wrong choice of food rather than poverty; 32,000 children had defective teeth, 7,000 had goiter, 1,600 had heart disease, and 2,000 had defective hearing. Nearly 20,000 children of fourteen to eighteen years who applied for work permits showed, in general, a still larger percentage of defects. Since many of the physical defects can be prevented or controlled the department of health education believes that the necessity for more health work in the schools is clearly demonstrated.

History of Medicine in Virginia.

With a view to correlating and preserving the history of medicine in Virginia, Dr. J. W. Preston, President of the Medical Society of Virginia, has appointed the following committee, to be known as the Committee on History of Medicine in Virginia: Dr. Wyndham B. Blanton, Richmond, chairman, and Drs. Beverley R. Tucker, Richmond, and Frederick C. Rinker, of Norfolk.

The Gorgas Memorial.

The birthday of Dr. William Crawford Gorgas was commemorated with special programs in various parts of the United States as well as in foreign countries on October 3. The fight of Gorgas against yellow fever and malaria and his administrative genius as surgeon general of the army during the World War, as well as his famed work in the field of sanitation were stressed in these meetings. Thirty-three health corps of the Memorial participated.

Of particular importance in this year's citation of the various efforts of the Memorial to honor the name of Gorgas is the statement that "one of the leading scientists in the field of tropical medicine" will soon be chosen by the Scientific Board of the organization, to take charge of the laboratory in Panama. This laboratory is made possible by an annual appropriation of the United States government of $50,000, which is to be supplemented by grants from some twenty-one South and Central American countries.

Panama has given over the use of a magnificent edifice recently erected for a proposed school of medicine to the Memorial, and it is predicted by Memorial officials the research campaign will be under way by November first in these quarters.

The development of the Memorial activities in the field of research will not interfere with the health educational campaign throughout the country, it is stated. The present plan of sending out caravan speakers to the various communities stressing the periodic examination and urging more public support for scientific medicine, will be continued. In the past few weeks these speakers have appeared before 156 groups in the middle-west, have reached millions through the radio, have exhibited health films to 42 associations, with an audience of 24,843, and have added in their trip seventeen daily newspapers to the list for Gorgas health material.

Asheville Meeting of the Southern Medical Association.

Located in the midst of the scenicly wonderful southern Appalachian mountains, and enjoying a superb year-around climate, Asheville, North Carolina, is an admirable place for the annual meeting of the Southern Medical Association, November 12-15, 1928. Asheville's central location, the ample hotel facilities, the superb equipment for outdoor sports, are advantages which have made this Carolina city a very popular center for conventions.

In and near Asheville are many enticing points of interest. The magnificent Biltmore Estate, world famous country home of the George W. Vanderbilt heirs is open to visitors three days of each week. Here are marvelous gardens and miles of landscaped drives reaching a climax of beauty in the chateau-like mansion. The famous Biltmore Homespun Industries, where mountain weavers make woolen cloth by hand, the numerous country clubs, the beautiful homes and estates, the Asheville Scenic Highway, the drive to the summit of Sunset Mountain overlooking the City, are among the attractions of Asheville.

Towering Chimney Rock, perched a thousand feet above the broad expanse of Lake Lure, mighty Mount Mitchell, highest mountain east of the Mississippi River, and venerable Mount Pisgah, western landmark of the Asheville plateau, are among the points easily reached by motor. The Pisgah National Forest a three hundred thousand acre outdoor playground of forested mountains and hurrying trout streams, the Great Smoky Mountains where a National Park is now being established, attract many visitors to this section. The numerous lakes of Western North Carolina, the beautiful Sapphire Country, the hundreds of miles of paved motor roads, are other attractions of "The Land of the Sky".

Five excellent golf courses now open for play, tennis courts, facilities for hiking, horseback riding, swimming, motor and sail boating, archery, amid beautiful surroundings make Asheville a southern center for sports of all kinds. November, the time chosen for the annual meeting is a month of autumn glories in the mountains and the weather at this season should be bracing and delightful.

Eleven modern hotels and inns offer excellent accommodations and service to convention attendants. The Battery Park, George Vanderbilt, Langren, Asheville Biltmore, Jenkins and Swannanoa Berkley offer the European plan of service, while Kenilworth Inn, Grove Park Inn, Margo Terrace, The Manor, The Princess Anne are operated on the American plan. Many of these hotels have national and international reputations for the excellence of the service tendered their guests. Two of the country clubs, the Biltmore Forest Country Club and the Asheville Golf and Country Club, also entertain visitors who may wish to be situated near good golf courses.

The City has railway connections with all principal cities of the United States and Pullman service is adequate to care for large gatherings. Asheville has also excellent connection by bus lines with many cities in nearby states. Highways radiating from Asheville as a center, connect this City with all of the more important cities of the east. It is an easy and pleasant journey to Asheville by motor, and many physicians attending the Southern Medical Association will doubtless journey to the annual meeting over the splendid roads.

Asheville urges the physicians of Dixie to come and enjoy the delights of their annual medical meeting amid the charms of "The Land of the Sky". A most hearty welcome, the way only Asheville knows how to extend it, and a pleasant and profitable time, is assured all who will come.

Measles in Glasgow Tenements.

A special report of the Medical Research Council of Great Britain on the relationship between housing conditions and the incidence and fatality of measles states that in selected groups of Glasgow tenements measles had spread rapidly from family to family and was essentially a disease of children under school age, whereas in a section with separate-entrance houses it was found predominantly among chil-

dren of five to ten years. The report shows that the case mortality for children under two years of age is ten to twenty times greater than for children of five to ten; hence the importance of a study of conditions which tend to bring about exposure to the disease at an early age.

Dr. Walter K. Slack,

Of the class of '27, University of Virginia, Department of Medicine, after interning at the University of Michigan Hospital for the past year, has located in Baltimore, Md., where he is assistant resident physician at the Presbyterian Eye, Ear, and Throat Charity Hospital.

Dr. Joseph Caplan, of the class of '25, University of Virginia, is resident physician at this hospital.

Dr. E. N. Lillard,

Of Graves Mill, Va., has located at Nokesville, Va., where he has taken over the practice of the late Dr. A. R. Gray.

Recurrence of Pellagra in Virginia.

The State Bureau of Vital Statistics announces that there has been an increase in the number of cases of pellagra in Virginia recently, which gives some cause for concern to our State Health Department.

Pellagra was endemic in Spain in 1735 and existed in Italy in 1750. After that, it spread over northern Italy to France and Roumania. Though there were sporadic cases in the United States later, the first outbreak to arouse especial interest was reported by Dr. Searcy, of Alabama, in a negro asylum in 1907 and 1908. After that it became more prevalent through the Southern States and 165 deaths were reported in Virginia during 1913, the first year it was reportable. The prevalence of the disease increased after that until a maximum of 332 deaths was reported in Virginia in 1915. Mortality from this disease decreased after this period until the low mark of 75 deaths was reported in Virginia in 1924. The mortality rose rapidly thereafter, until there were 156 deaths from pellagra in 1927.

The United States Public Health Department did quite a deal of investigative work into the cause of this disease, and concluded that pellagra was due to a diet deficient in proteins. So it was thought that the era of general prosperity after 1918 accounted for the improved situation. However, it is now stated that many well-to-do Virginians are suffering with pellagra, which would seem to be due to their failure to eat the proper food—milk, eggs and meat for the animal proteins, and beans and peas for vegetable protein,—rather than to their inability to secure the proper food, as is the case with a large part of the European population.

Dr. Powell G. Fox,

Of the Mary Elizabeth Clinic, Raleigh, N. C., returned to his work there on September the first, after a four months' course in urology at the University of Pennsylvania, Philadelphia. Dr. Fox has a number of friends in Virginia, being an alumnus of the Medical College of Virginia, of the class of '22.

Dr. J. D. Hagood,

Clover, Va., was elected vice-chairman of the Halifax County School Board at its meeting on September the tenth.

Medical Service for Rural Children in Georgia.

Twenty-five hospitals and a dozen railroads in Georgia have responded to an appeal of the State health commissioner by promising reduced rates to rural school children in need of medical care, so that they may have the same expert medical service as is available to children in the larger cities of the State. No district in the State is over seventy-five miles from a hospital.

Dr. J. B. Harvie Waring,

Formerly of Blanchester, Ohio, announces his removal to 7 East McMillan Street, Cincinnati, Ohio.

During the past summer, Dr. Waring made a motor trip to Richmond and visited relatives here.

Dr. Fred E. Hamlin,

Roanoke, Va., announces removal of his offices to Suite 623 Shenandoah Life Building, that city, where he will continue his specialty work in diseases of the ear, nose and throat.

The Play Street Invades Tokyo.

Traffic is giving way to children in Tokyo. How far the "Flowery Kingdom" has accepted the motor car and shelved the jinrikisha is tragically indicated by the 2,500 child victims of street accidents in that city last year. And now the city fathers of Toyko have accepted an even more modern development than the motor car and have set apart sections of 200

streets for children to play in after school hours, traffic being stopped on these streets from 1 to 5 P. M. The city officials are also endeavoring to establish more playgrounds, but they have been balked in their purpose by the difficulty of acquiring proper sites.

The Atlantic Coast Line Railway Surgeons' Association

Held its annual meeting at Virginia Beach, Va., early in September, under the presidency of Dr. E. G. Moore, of Elm City, N. C. The address of welcome was made by Dr. Southgate Leigh, of Norfolk, a member of the Association. At the election of officers, Dr. J. W. Simmons, of Brunswick, Ga., was elected president, and Dr. Harry Ainsworth, of Thomasville, Ga., secretary. Dr. Leroy L. Jones, of Portsmouth, was elected vice-president from Virginia, and Dr. Henry I. Clark, of Scotland Neck, vice-president from North Carolina.

Transferred to Richmond.

Col. John H. Allen, U. S. Army, Medical Corps, has been ordered to duty with the Eightieth Division, succeeding Major H. L. Freeland, and will be located in Richmond. He has recently been on duty in Hawaii. Col. Allen was originally from Tennessee and is an alumnus of the George Washington University Medical School, Washington. He was cited by the War Department for meritorious service during the World War.

New Building to Replace Edmunds Hospital.

It is announced that Dr. T. W. Edmunds, of Danville, Va., has recently acquired a tract of land adjoining his hospital, with a view to erecting a four-story modern hospital building. It is understood that the new hospital will have a capacity of sixty beds. Plans have been approved and work will be started on the new building shortly.

Progress in the Field of Mental Hygiene.

The First International Congress of Mental Hygiene will be held in the spring of 1930 at Washington, D. C., according to the announcement of the organizing committee of the International Committee for Mental Hygiene.

Dedication of the Medical Center of New York.

Dedication of the Medical Center of New York has been scheduled for 3 P. M., on Friday, October the 12th. At this time the following buildings are to be open for inspection between the hours of 3 to 6 P. M., admission being by card: College of Physicians and Surgeons. School of Oral and Dental Surgery, Vanderbilt Clinic, Anna C. Maxwell Hall (Presbyterian Hospital School for Nursing Residence). Visitors will be permitted also to inspect the first floor of the Presbyterian Hospital, which is now in full operation. At the dedicatory exercises, addresses will be made by Gen. Wm. Barclay Parsons, chairman of the Joint Administrative Board, and Dr. Samuel W. Lambert, Dean Emeritus, College of Physicans and Surgeons.

Dr. Robley R. Goad,

Of the class of '25, Medical College of Virginia, who has taken a two years' course in ophthalmology at the State University of Iowa, has located in Statesville, N. C., where he is connected with the Davis Clinic.

Married.

Dr. John Melvin Crymes, South Hill, Va., of the class of '26, Medical College of Virginia, and Miss Ruth Elizabeth Staude, Richmond, Va., recently.

Dr. Fred F. Oast,

For a short time at Catawba Sanatorium, Va., has just returned to Virginia after spending the past year in the West and Southwest where he was observing climatic and other conditions pertaining to chest work. He has taken offices in Shenandoah Life Building, Roanoke, Va., and will specialize in diseases of the chest.

The U. S. Civil Service Commission,

Washington, D. C., announces the following open competitive examinations, applications to be rated as received by the Commission, at Washington, D. C., until December 29:

Junior Medical Officer (Interne);

Graduate nurse, graduate nurse (visiting duty), and graduate nurse (junior grade);

Senior medical officer, medical officer, associate medical officer, and assistant medical officer.

Keep-Well Clinics for Minneapolis Children.

The mothers of Minneapolis are being educated by the keep-well clinics which have been conducted in that city to realize that the periodic examination of their children is worth paying for. Attendance at the free clinics be-

came so heavy that the physicians were unable to examine all the children, and as a consequence private physicians are offering a keep-the-child-well service in their offices at a flat rate, which is considerably less than their regular office fee. A minimum family income, varying somewhat with the number of children, has been decided on as the factor determining whether the mother shall be entitled to the service of the free clinic, and many mothers who formerly took their children to the clinic now take them to the family physician.

Dr. Basil B. Jones

Announces removal of his offices from the Children's Memorial Clinic to West End Medical Building, 2620 Grove Avenue, Richmond, Va., where his practice will be limited to Pediatrics.

Dr. and Mrs. H. W. Lewis

And daughter, Mildred, of Dumbarton, Va., returned home about the middle of September, after a motor trip with friends through Southern Pennsylvania and Maryland. They visited friends in Washington, en route.

Dr. and Mrs. Murat Willis

Returned to their home in Richmond, the first of October, after a visit of several months in France, England and Switzerland.

Christmas Seals.

Sixteen million Christmas Seals have arrived at the office of the Virginia Tuberculosis Association, 511 Atlantic Life Building, Richmond, to be sold in Virginia.

The sale opens the day after Thanksgiving, in accordance with the agreement between the American Red Cross and the National Tuberculosis Association, in order that the annual Roll Call of the Red Cross and the sale of Christmas Seals will not interfere with each other.

The work of the tuberculosis association is done almost entirely by volunteers, and it is financed by the little penny stickers, which have come to play such an important part in the health and happiness of the citizens of our State.

This year the design of the Christmas Seal is a ship—an Argosy containing a cargo of health for those stricken with tuberculosis and protection for those who are exposed to the disease.

Obituary Record

Dr. Robert Patrick Carr,

Prominent physician of Norton, Va., for the past twenty-five years, died September 21st, after an illness of about a year. Even after being partially paralyzed several years go, he took a course at Tulane University in diseases of the eye, ear, nose and throat, and returned to Norton to continue his practice from his wheel chair. Dr. Carr was born in Tazewell, Tenn., fifty-one years ago, and graduated in medicine from the University of Louisville, Ky., in 1904. He had been a member of the Medical Society of Virginia since the following year. Dr. Carr was active in the civic and professional affairs of his section and was past grand commander of the Virginia Knights Templar. Besides his wife and three sons, Dr. Carr is survived by his mother and several sisters and brothers.

Dr. Clarence Archibald Bryce,

For forty years editor and owner of *The Southern Clinic*, died at his home in Richmond, Va., September 21st, having reached the age of nearly eighty years. He graduated in medicine from the Medical College of Virginia, Richmond, in 1871 and had been practicing his profession in this city ever since. His wife and four daughters survive him. Dr. Bryce was a prolific writer, having written several books on medical subjects and also some of lighter vein for popular reading.

Dr. Edward Jenner Wood,

Prominent internist of Wilmington, N. C., died at his home in that city, September the 21st, death being due to heart disease. Dr. Wood was born in Wilmington fifty years ago and, after graduating from the University of North Carolina, studied medicine at the University of Pennsylvania, Philadelphia, from which he graduated in 1902. He later did post-graduate work abroad and received a diploma in tropical medicine from the Royal College of Physicians and Royal College of Surgeons in England. He was author of a treatise on pellagra and was considered an authority on this disease.

Dr. William Boyd Brigman,

Located for sometime at Bishopville, S. C., died September the 20th in the U. S. Veterans' Hospital at Lake City, Fla. Dr. Brigman had many friends in Virginia, having graduated in medicine from the Medical College of Virginia, Richmond, in the class of 1916.

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THE NEW DAY IN MEDICINE.*

By JOHN W. PRESTON, M. D., Roanoke, Va.

It has long been the custom of the Medical Society of Virginia to invite the public to participate in the opening exercises of its annual session. Signally honored as I am to preside upon this occasion, the fifty-ninth annual session, I deem it a special privilege to speak a word of appreciation of the presence tonight of so distinguished a company.

However much the Medical Profession may advance in the knowledge and conquest of disease as it affects the individual, it is not unmindful that the prevention and control of epidemics, the education of the medical student, and indeed the application of all worth while accomplishments of the Healing Art as applied to the masses, can be attained only by the cordial and full co-operation of the public which it serves.

From time immemorial devotees of medicine have been honor-bound to give freely to fellow practitioners, without money and without price, all discoveries and inventions made in the study of disease, regardless of the cost to themselves. Likewise today, the self same spirit and practice prevails as relates to the dissemination of all medical knowledge relating to community welfare and to community health.

Medicine had its origin in the shrouding mists of the past, even perhaps beyond its first mention in the Holy Writ, where it is recorded that Joseph was served in Egypt by his physicians, and throughout the succeeding ages it has waxed and waned as empires have flourished and crumbled,—now and again in the hands of the soothsayer, the barber and camp follower; but ever lured on by the steady accomplishment of adding to human happiness, and postponing death. In pursuit of this goal it levies to the utmost today, as in the past, upon science and observation in every climate, in every country, and in every age; always in search of the Balm of Gilead.

Like guiding beacons in medical history stand out two figures: Aristotle, pupil of Plato and physician to Alexander, who first systematically studied and taught anatomy; and Harvey, a student of the Italian Schools, physician to James the First, who began practice the self same year as our own Jamestown was founded, whose monumental work established physiology as a science. Then another far cry to Pasteur, not a physician, who labored upon diseases of the silk worm, in his beloved France, while Lee and Grant faced each other at Appomattox, and who made the basic discovery that infections are due to the two partners in crime, germ life and lowered immunity; Lister making the practical application two years later and forever linking bacteriology and the laboratory with medicine. Thence forward, the brain of the investigator was doomed to relentless toil and "Laboring upon the borderland of speculation and fact", through animal experimentation, a new epoch was reached with the development of antitoxin in 1890, and still another in that of the X-ray five years later, thus through the addition of biology and physics establishing medicine as a science far more exact than had been dreamed in the days of empiricism.

Building upon this foundation, the past three decades have witnessed developments well-nigh revolutionary: notably, exactness in the study and diagnosis of diseases of the circulation, growing out of the development of the electro-cardiograph, and the universal use of blood pressure apparatus; the knowledge gained relative to the transmission of disease through the agency of insects, as applies particularly to yellow fever, malaria, typhus and bubonic plague; the control of typhoid through sanitation and vaccination; the discovery of the far-reaching effect of focal infections as relates to systemic disease; the new knowledge of the relation of vitamins to health, and to disease; the increased knowledge of the endocrines

*Address of the President presented at the fifty-ninth annual meeting of the Medical Society of Virginia, in Danville, October 16-18, 1928.

through studies in metabolism, through animal experimentation and through clinical observation; the use of radium as an accessory in the treatment of malignancies; the added knowledge of such nutritional diseases as diabetes with the incidental discovery of insulin; developments in anaesthesia; and last but not least, advances in the treatment of the anaemias. These things and more have happened during the period of active practice of many men here tonight who still count themselves young. In truth through the agencies here mentioned it may be said that medicine has advanced more in the past few decades than in the thousand years preceding.

Changed Economic Conditions and Changing Diseases

While we recount these things with pride, which we trust is pardonable, yet there are still unsolved and weighty problems brought upon us by changing habits of living, changing economic conditions of our population, and changing incidence of disease, such changes for instance, as the pandemic of pellagra which, beginning in 1907, spread over the South, and the end is not yet, four hundred and eleven deaths having been reported in this state during the past year; the tragedy of influenza of 1918 and subsequent years; the changed type of pneumonias; the pandemic of encephalitis lethargica which appeared in 1916 and still takes its toll; the advent of typhus in Virginia in 1918 to be followed by other cases in the past one and a half years; the diagnosis of tularemia in the state in 1920 with the reporting of thirty-nine cases within the past three years. Last among these unwelcome visitors and sojourners is Malta fever, three cases within the past year.

Of far greater importance, however, than either of the diseases here mentioned are two which in increasing incidence have crept upon us. I refer to the growing prevalence of diseases of the heart and blood vessels, and of nervous and mental diseasese, both probably due in part to the unprecedented drift of our population from the country to the cities and towns, and the consequent changing from work with the hands to work with the brain.

The innumerable exigencies of modern life, the high pressure and speeding up alike of business and social contacts by the universal use of the telephone and automobile, and the late hours devoted to the movie and the radio, are taking an increasing toll from the nerves and organs of circulation of the old and young alike. Even now it is said that more than one out of every three hospital beds in the country are devoted to the care of nervous and mental disorders and the overcrowding of some of our institutions is pathetic. This does not take into consideration the borderline type of individuals who are perhaps only a little queer and who by proper guidance might be salvaged. It is stated upon good authority that more than one out of every five deaths of our population over fifty years of age are now due to disorders of the heart and blood vessels. Indeed, heart disease is today causing more deaths in the United States than is any other disease, and of equal importance is the fact that for each one who dies there are ten whose health is impaired by it.

Those Who Have no Disease Yet Who Are Sick

Moreover, it has indeed been but too slow to dawn upon all of us that aside from those organically sick there are in every community those who have no disease yet who are sick, sick in the sense of the business man who sees financial disaster ahead, loses his appetite, sleeps poorly, develops head and back pains, becomes self centered and neurasthenic; or the mother of a household, whose nerves strained to the breaking point by a domestic crisis, develops cardiac pain and palpitation, nervous digestive disturbances, stops eating, emaciates and goes to bed, an imaginary victim of serious disease. That "Hope deferred maketh the heart sick," is not a figment of the imagination. These are the types that become ready prey to cults and quacks, and who are indeed fortunate if they fall into the hands of a practitioner who has discretion, tact, and judgment.

The Broadening Scope of Medicine

With the average span of life lengthened some ten years in the present generation, yet another responsibility has come to the physician, that of prolonging the usefulness of the aging individual and adding to his capacity to enjoy life as the shadows lengthen.

Under our very eyes "effort to cure disease is rapidly passing to effort to prevent." How well this is succeeding in Virginia as a joint

undertaking of the general practitioner and our Boards of Health, the annual report of our Bureau of Vital Statistics supplies a record of which all of us may well be proud. Infectious diseases, other than those of the respiratory tract, have well nigh disappeared. The growing knowledge of a properly balanced diet and of a proper use of sunlight is so permeating all classes as to make the puny infant the exception rather than the rule. Over all Virginia today, thanks to the public school system and to the public press, mothers are vying with each other that their children may first become "five pointers". Through better diagnostic methods, and safer surgery, the incidence of chronic invalidism as a result of diseased abdominal organs and focal infections of the nose, throat, and teeth, has yielded beyond belief. Tuberculosis has been reduced from the high estate "of captain of the men of death," to fifth in the ranks, 50 per cent less now than twenty-five years ago.

Briefly but essentially, these are the things that mark the passing of the old and the beginning of the new in medicine, changes which in a measure justify the assertion that text books of medicine need to be entirely re-written every twenty years. With the new there have come many problems that jointly affect the physician and the public and must be jointly worked out.

Medical Care of the Family

In the new order of things with the rapid development of the specialties, the organization of clinics, the establishment of hospitals in the smaller towns, the universal use of quick transportation and withal the lessened prevalence of disease have brought much discussion of the passing of the Family Physician.

Indeed, it may be that the type made famous by Ian Maclaren will be relegated to song and story but, come what may, there will always be a real need for a physician of good training and broad grasp who, keeping himself informed in the advances in medicine and thereby maintaining the confidence of his community, will be depended upon as in the past, as a counselor and guide. The readjustment, which most certainly will come, surely will not be from the direction of a lower standard of training as is advocated by some; on the contrary, the public is growing more discriminating and will not be satisfied with the mediocre.

The time of the family physician has heretofore been largely occupied in treating acute infections. He has, therefore, perhaps somewhat neglected many the discomforts of his patients which have not been disabling and which they have learned to endure, but for the treatment of which he will now be passed by unless he becomes interested. The time is rapidly approaching that the difference between fair health and buoyant health will be more appreciated, and the periodic health examination which is slowly growing in favor rightly belongs to him. The question may with propriety be asked, is he properly equipping himself at present, and is he yet sufficiently interested to do this work creditably?

The Public Can Help

As an outgrowth of the days now passed when all alike felt that the hope of the cure of all bodily ills was to be found in botany and chemistry and when little thought was given to other remedies than drugs, the public somehow still feels that regardless of the time and thought spent in diagnosis and in giving advice as to diet, hygiene, and similar matters of fundamental importance, a physician has not discharged his full duty till a drug is prescribed. Can we not now deal perfectly frankly with each other, and cannot all be taught that today the giving of drugs, while specific in a few diseases and helpful in most diseases, is mainly an adjunct in treatment? Pointing in the right direction is the practice of the pediatrist in training mothers to bring their babies for periodic inspection and advice. Who has failed to note how eagerly mothers avail themselves of such an opportunity and how willingly they pay for such service? In this direction lie the well worth while activities of the future, and it is with confidence that we look to the public for cooperation.

Training the Undergraduate

One often hears the criticism that the work of training the medical student is indirect and wasteful in time and energy. It is stated that in most schools little or no training is given with the direct view of adapting one's practice to the bedside in the home, and that as a result

the graduate feels lost when separated from hospital facilities, instruments of precision, and trained assistants and for these reasons fewer are preparing for general practice.

While it is self-evident that matters pertaining to college training belong primarily to college faculties, the public in Virginia, at least, has been generous in according leadership to such organizations as our own and it would therefore seem appropriate to call attention to the fact that the best medical minds of the country are giving serious consideration to the problems involved in undergraduate training, chief among which is that of finding means of admitting to our colleges many who cannot now be accommodated and of reducing the time and expense of medical training, without lowering its standard. In this connection it is proper to recall that since 1899 Rush Medical College has conducted an all the year course with breaks upon holidays and a month's vacation through September, thereby condensing a four years course into three. Five other "A" grade schools have since adopted the plan and it is generally understood that Duke University, soon to be opened, will also adopt it, with at least two other state universitites planning its adoption. Is not this a decided step in advance? If so, is there any substantial reason why the two schools of our state should not begin to make their plans looking in this direction?

The technicality incident to the requirement of the Virginia statute, that our course of study continue over a four year period, could doubtlessly be met by including an intern year, utilizing if need be such additional hospitals as could qualify according to the usual requirements for instructing interns, thus graduating our students and equipping them with a year's internship in four years instead of five. Admittedly, such a change could not be made without a re-arrangement of curricula that would require much thought, and some increased expenditure, which latter would in a measure be offset by putting into commission the investment in our schools now idle some three months in the year. As a matter of fact every other school in our state, receiving State aid, is now conducted during the summer months; some six thousand students in all having been enrolled during the past summer.

Looking to efficiency in medical training in general, time does not permit a full discussion as to whether through a commission of competent teachers more concise, pointed and readable text books might be devised—the obsolete and superfluous deleted. Neither can I here discuss whether or not some such plan as that now adopted by the University of Georgia be feasible, that of having all seniors in groups of two, with an instructor as consultant, take charge of and treat patients in their homes; thereby harking back to the days of the preceptor and to more practical methods, yet matters such as these demand serious consideration.

Problem of the General Practitioner Keeping Informed

At the present time, millions are invested in this country in institutions for post-graduate work in medicine, yet it is a fact that comparatively little attention is given to short courses best suited to stimulating and freshening up the man in general practice. Fortunately, however, as is well known, both of our State institutions are feeling their way in this direction. Throughout the past year a chief concern of the officers of your Society has been an endeavor to co-operate and to awaken a more lively interest throughout the State, in some plan whereby better means might be afforded the general practitioner of brushing up at more frequent intervals.

Briefly stated, the impression gained by your officers from the year's study is that the physicians of the State now most interested are not those in greatest need of post-graduate work, and to attain the greatest accomplishment will necessitate some practical plan of carrying high class and interesting didactic work, either through local organizations or otherwise, to practitioners who cannot, or who think they cannot, leave their practices for more than a very short period at a time. It is now evident that among the agencies of greatest potential good are the increasing number of hospitals scattered through the State which maintain regular staff meetings in which all are invited to take part; these should by all means be encouraged. It is possible that no one of the plans now meeting with so much success in other states would exactly suit Virginia, and further that a plan that would be suited to

one geographical portion of the State might not please another. It is a pleasure, therefore to state that the Extension Department of the University of Virginia has, upon the invitation of your Committee, agreed to make a further careful study of the whole matter and to report at a later date.

Is it too much to visualize the development of a plan of co-operation by which the post-graduate courses given by our two colleges may be synchronized with each other and gradually lengthened, or perhaps preferably given at more frequent intervals as the demand may grow, and that in some way a fund may be raised whereby each may be supplied sufficient additional teaching force that local organizations may be visited at intervals and such didactic lectures and clinics systematically supplied as each organization may desire? Incidentally, may not also attention be called to the wonderful opportunity for real achievement, could an endowment be secured for such purpose?

Broadly speaking and in conclusion, I would emphasize that as a science and as an art, in this modern day, the development of medicine has been second to that of no other occupation or profession, but that the problem which grows apace is the practical application of the best it has to offer to the masses, and that the solution of this problem is the joint responsibility of organized medicine and of the public.

Shenandoah Life Building.

PRESSURE ON THE BRACHIAL PLEXUS.*

By WILLIAM B. MARBURY, M. D., Washington, D. C.

Pain in the arm is not an uncommon complaint and the usual diagnosis is neuritis. Rest, application of heat, and one of the salicylates will generally relieve the symptoms and the underlying cause may not be determined. Occasionally, one sees an intractable case which does not respond to any of the usual treatments and a more exhaustive study has to be made. This includes an X-ray of the neck and shoulder on the affected side to exclude the possibility of a cervical rib or arthritic changes in the cervical vertebrae. Butler and Elward[1] have enumerated eighty odd causes of pain in the shoulder and emphasize the fact that at least ten of the most likely of these can be demonstrated on a medium size (10x12) film. The possibility of focal infection here, as in many other conditions, must be excluded. There may be a history of trauma but this is often so indefinite that it is difficult to associate it with the onset of the trouble. Lyle reports the case of a man who was struck on the side of the neck and complete paralysis of the arm followed. The arm was disarticulated at the shoulder but the patient returned some months later with excruciating pain. The posterior roots of the 6th, 7th, and 8th cervical and 1st dorsal nerves were divided within the spinal canal but the pain continued. The anterior roots were later divided with the same result.[2]

A great deal has been written in regard to cervical ribs and their relation to brachial neuralgia, and this abnormality is now recognized as a possible source of trouble; on the other hand, it may exist without giving any symptom and only be discovered when an X-ray is taken for some other cause. Adson and Coffey[3] have shown that the scalenus anticus may compress the brachial plexus against a cervical rib, and advise the division of this muscle near its origin. Brammill, of Edinburgh, was the first to suggest that symptoms that are usually associated with a cervical rib might be caused by pressure of the lower brachial trunk on the first thoracic rib. Since then, these cases have been divided into two classes: (1) Those in which an abnormal rib is demonstrable, and (2) those in which no abnormality can be observed. It is with this latter class that we are particularly interested.

In trying to explain a possible cause for pain in the arm due to cervical or first dorsal rib, a number of authors have given more or less plausible reasons for their being. None, however, are entirely convincing. To quote from Brickner, "We believe that the ultimate etiology is to be sought rather in the dynamo than in the static mechanism. Such an explanation, with a definite relation of the exciting moment to the onset of the symptoms, has been offered by Todd. He calls attention to the fact that in the development of the arm and hand, the axis of growth is at the level of the seventh cervical segment and that consequently the seventh cervical root should be the largest nerve root in the appendage. The eighth and ninth nerve roots must then

*Read at the Sectional meeting of the American College of Surgeons in Roanoke, Va., January, 1928.

course upwards to the level of the seventh root and then downward to their distribution in the arms. Any influence, therefore, that could cause tension on the eighth or ninth roots which forms the inner cord of the brachial plexus would give rise to the symptoms observed with a cervical rib, or with a first dorsal, simulating a cervical rib. We may say, then, that either an elevation of the rib relative to the shoulder girdle, or a depression of the shoulder in relation to the rib, would satisfy the conditions necessary for the appearance of the symptoms here described."

Buckner has been able to collect thirteen cases of brachial plexus pressure due to a normal first rib. All but his own, which are not included in this, were reported from the British or Australian literature. He himself has had six cases, only one of which came to operation. Of these nineteen cases in all, thirteen were operated upon. The cases of abnormal first rib which gave pressure symptoms are even fewer in number, only six being collected by the same author. Of the thirteen cases operated on, nine were cured or experienced such ameliorations of symptoms that they were able to return to duty.

We see then that there are three conditions that may give almost exactly the same symptoms, i. e., (1) A cervical rib, (2) an abnormal first dorsal rib, and (3) a normal first dorsal rib. An X-ray will in nearly every case make the distinction.

Symptoms.

The symptoms most frequently met with are pain in the arm, more frequently along the course of the ulna and internal cutaneous nerves, and sometimes tingling in the fourth and fifth fingers. The pain is fairly constant but aggrevated by allowing the arm to hang and relieved by elevation. There is generally tenderness on pressure over the brachial plexus in the neck and the pain in the arm is exaggerated by this maneuver. The hand grasp may be weaker on the affected side and some atrophy may be noted in the intrinsic muscles of the hand. A slight increase in the reflexes about the elbows is not uncommon, though these can be absent at a later stage.

Paresthesia is a fairly constant phenomenon and it has been stated that the loss of protopathic sensibility is greater than that of epicritic. Trophic ulcers have been reported by Stopford. The vascular changes are more variable and may range from normal to marked cyanosis. These are due either to compression of the artery in the neck in the same manner as the plexus or to vasomotor imbalance and is somewhat similar to Raynaud's disease.

Diagnosis.

The diagnosis has to be made from radiculitis, spinal cord lesion or tumor, syringomyelia, amyotrophic lateral sclerosis and subdeltoid bursitis or Codman's shoulder, etc. It is well to begin with a Wassermann and an X-ray. In radiculitis or the radicular syndrome, the tenderness is found just lateral to the spine and arthritic changes may show on the X-ray plate. In most of the cases reported the patient complained of pain when the arm was allowed to fall loose and exaggerated by any weight on the shoulder, as a heavy overcoat. Reversely, relief was obtained by suspending the arm by a ribbon sling or resting it on a pillow.

Treatment.

The treatment may be operative or nonoperative. Brickner operated on one out of six cases and Stopford nine out of ten. Physiotherapy to strengthen the trapezius and hold the shoulder at a higher level is rational and offers the best chance of amelioration of symptoms by a conservative method. In the intervals between exercise and treatments the arm should be suspended by a sling so as not to tire the muscles of the shoulder girdle. In cases that do not respond to this, and who have progressive muscle, nerve or vascular changes, an operation should be advised. The results in the latter have been encouraging.

Case Reports.

H. G. S.—Member of D. C. Fire Department, was first seen in January, 1926, complaining of recurrent dislocation of his left shoulder. His family history and past history were unimportant. He first dislocated his arm four years ago. He was only off duty two days. Following this he dislocated his arm ten or fifteen times. He was always able to reduce the dislocation himself or by the aid of some of his companions, so that he was

never seen by a doctor while the arm was out. He states that he could hear a click when the reduction was accomplished. The arm was put in a Velpeau bandage for two weeks and then a sling was worn for another week or two. Because of repeated dislocations in spite of treatment, an operation was decided upon and, on April 12, 1926, an incision was made in the axilla posterior to the vessels and the capsule exposed. This was incised vertically and the edges overlapped so as to take up any slack. There was practically no bleeding and the field of operation was clear at all times. The circumflex nerve was not dissected out but was supposed to have been retracted with the post-circumflex artery. Following this, the patient had some paralysis of the deltoid and limitation of abduction of the arm; the paralysis, however, was apparently not complete. The patient resumed his duties and had no further recurrence of dislocation, but in September, 1927, he returned, complaining of pain and weakness in his arm and hand. The old scar was excised but no neuroma or other conditions were found to account for the pain. Dr. Kerr saw him in consultation and thought that the trouble emanated from the brachial plexus. An X-ray was taken, which showed nothing abnormal other than that the transverse process of the seventh cervical vertebra was slightly longer than usual. The Wassermann examination was negative. The grasp in the left hand was distinctly weak. Measurements showed the left arm and forearm to be smaller than the right. He could not distinguish between sharp and dull objects and the epicritic sensibility was diminished. The pain in his arm was enough to keep him from sleeping and on several occasions he was admitted to the hospital for observation and to give him a few nights' rest with narcotics. Holding the arm up with a Velpeau bandage gave relief at first but later he complained of the weight on his neck. His hand was cold and the pulse at the wrist was distinctly less perceptible than on the right side.

On December 1, 1927, under general anesthesia, an incision was made along the clavicle and along the anterior margins of the trapezius, the two incisions meeting at the outer angle of the neck. This flap of skin with the platysma were retracted medially. The external jugular, transverse coli and supra-scapular veins were divided between clamps and ligated. The omohyoid muscle was divided and retracted. Some fat and glands were removed, exposing the brachial plexus. This seemed normal in position but drawn taut over the first rib. Anteriorly, the sterno-mastoid and scalenus anticus muscles were severed along their outer margins for about half their breadth and posteriorly the scalenus medius was treated in the same way. The subclavian vessels were now exposed and the phrenic nerve was seen on the inner portion of the scalenus anticus. The long respiratory nerve of Ball was not exposed as the posterior border of the scalenus medius was not uncovered. The first rib could now be felt and, by retracting the cords of the plexus with narrow tapes, it was exposed over a distance of about two inches. In freeing the rib from its periosteum, an opening was made in the pleura and some sucking could be heard. About an inch of the middle portion of the rib was removed with rongeurs allowing the divided ends to drop to a lower level in the neck.

The patient made an uneventful recovery except that he had some cough and shortness of breath. At the present time he has no pain in his arm and his hand grasp has remarkably improved. He does, however, complain of pain in his chest. An X-ray taken recently shows no collapse of the lung and no elevation of the diaphragm on the left side.

References.

1. Butler, P. F., and Elward, J. F., *Amer. Jour. Roentgenology & Radium Therapy*, Vol. XIII, 1925, p. 536.
2. Intractable Brachial Neuralgia, *Annals of Surg.*, Vol. LVI, 1912, p. 475.
3. Adson, A. W., & Coffey, Jay R., Cervical Rib, *Annals of Surg.*, LXXXV, p. 839.

1015 *Sixteenth Street.*

BRIEF REVIEW OF SOME OLD AND NEW OBSTETRIC PROBLEMS.*

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Unfortunately, advances in obstetrics have not made as many strides as in other branches of medicine, probably due to the fact that the department of obstetrics has remained as a neglected science and art. However, there have recently been a certain number of helpful

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hints, experiments and definite methods of treatment, that have proven beneficial and opened new avenues of thought for a more thorough understanding of the problem of motherhood.

From the material which would comprise recent advances in this field, a selection has been made of that which seemed best to illustrate this subject.

At the outset, it is in order to call attention to the fact that in the United States approximately two-thirds of deliveries are made by medical men, and about one-third by midwives. Over the entire world nearly 35 per cent of all babies delivered are by physicians. The fact that such a large number of these cases are handled by non-professionals should stimulate a desire to upbuild this particular field.

There is reason for serious study concerning the inexcusably high maternal mortality rate in the United States. This country ranks 19th among the 20 nations which compile records worthy of serious consideration. A 1926 report of a Bureau of our Government stated as follows: "Among the countries having (maternal death) rates less than one-half that of the United States are Denmark, Finland, Italy, Japan, the Netherlands, Norway and Sweden."

Our fault is principally concerned in the high septic rate, for the other complications of pregnancy show constantly improved figures. In 1921, in the United States registration areas, two-fifths of all the deaths were due to septicemia, 6,057 out of 15,027, or 40.3 per cent. At present there is a movement on foot in which the Committee on Maternal Welfare is to make careful investigation of this matter. In 1926, Dr. Geo. W. Kosmak, Editor of the *American Journal of Obstetrics and Gynecology*, announced the inclusion of a Department of Maternal Welfare to be established by the Journal. This is the first effort made by any medical publication to stress in a definite way the activities of the Joint Committee and the promise of this work is indeed gladly welcomed.

The obstetric teaching in the past in our medical schools has been sadly neglected. A few years ago men were graduated from our universities and medical schools and allowed to practice obstetrics upon an innocent community, who had actually never seen a case of labor. In the past decade the field for improved clinical teaching has been better cultivated. The students in our Class A schools receive, in addition to their didactic work, practical demonstrations on manikins, outdoor obstetrical service under the supervision of a staff member, and participate in actual deliveries. With the erection of modern maternity hospitals and modern technique of obstetric diagnoses, the student has splendid opportunity of witnessing various types of deliveries. In most of the schools a certain number of cases is required by each student before graduation.

In the last few years there has been an increased tendency towards productiveness in research by American obstetricians. With this stand in view, a better provision has been made for a more fully equipped department in our schools, with added facilities in the dispensaries, thus affording abundant clinical opportunities for teaching. In addition to the above, there are at hand available post-graduate hospitals in this country and abroad where instruction may be received and modern methods applied under direct supervision of some of the pioneers—all viewed with a full sense of appreciation.

Pre-Natal: The great subject of the hygiene of pregnancy with all its phases has accomplished wonderful results for the expectant mother. It is well to remember that the fetus may be compared to a tenant who rents or leases a house. The fetus may be represented as the tenant who leases, so to speak, the sacred uterus for a period of nine months and after the expiration of that time it is supposed to vacate from its premises, the said party of the second part, agreeing to leave said party of the first part in good condition. During this stage there is going on an "internal housekeeping" and metabolic changes are constantly taking place. Besides a careful history, urinalysis and blood pressure reading, a routine examination of the heart and lungs together with pelvic mensuration should always be made. A physician who practices obstetrics should regard pelvimetry and abdominal palpation equally as important as one who treats diseases of heart and lungs by means of auscultation and percussion.

We can only reach the unborn infant through the mother who carries it. The standards of ante-natal care should be fully recognized and its importance weighed. Pre-natal care is that part of maternal care which has as its object the complete supervision of the pregnant women in order to preserve the hap-

piness, health and life of the mother and child. Therefore, all pregnant women should be under medical observation during the entire period of gestation, for it is only by careful routine ante-natal care that pregnancy and labor can be made safer. During the puerperium, a series of exercises should be given with the purpose of strengthening the abdominal muscles and promoting involution.

As an integral part of pre-natal observation, a post-partum examination should be made six weeks after delivery, which should include use of speculum and bi-manual examination. Lacerations and cervical infections may be cleared up early and thus prevent gynecological sequelae.

Examination of the Calcium Regulation During Pregnancy: From a study of the blood of fourteen pregnant women, Hetenyi and Liebmann conclude that there is a diminution in the calcium content of the serum toward the end of pregnancy. The calcium which is in the blood of pregnant women is quickly taken up. This avidity may be due, first, to the calcium requirements of the fetus, and, second, to a special affinity of the cells of the mother. In a few cases there appear to be an increased renal permeability to calcium. The blood of the umbilical vein contains more calcium than that of the artery.

Blood Calcium in Eclampsia: An investigation of the blood calcium findings in eclampsia by Feinberg and Lasly was prompted by the following considerations suggesting a possible relationship between the two. It has been shown that infantile tetany is associated with a decrease in blood calcium. Because of the clinical similarity of the latter condition and eclampsia, it was natural to expect similar findings here. It is further evident that the mineral metabolism of the gravid woman is greatly increased during gestation, especially toward the end of pregnancy. These observers agree that where the mineral metabolism of the mother is unable to stand this drain of calcium, a calcium poverty, manifesting itself in a hypocalcemia, would result, and that this condition possibly had some relation to eclampsia. Twelve cases of pre-eclamptic and eclamptic toxemias were examined, but no appreciable relationship could be found. This, however, may lead to more fruitful research.

Blood Chemistry in Eclampsia: According to Stander and Radelet, the chemical findings in this condition are as follows: high uric acid; markedly increased lactic acid, not wholly due to muscular hyperactivity; decrease in CO_2 combining power; tendency towards a hyperglycemia; usually no increase in non-protein nitrogen; slight, but definite increase in blood urea-nitrogen.

X-Ray in Embryology and Obstetrics: A book under this caption was published in 1926 by Dorland and Hubeny. Human embryology has been slowly emerging from the obscurity, which has for so long a time concealed its wonders, and the advent of the X-ray has greatly facilitated this process, especially in the study of bone development. Radiography in the past few years has been a great help in the field of obstetrics in clearing up pelvic contractions and doubtful presentations and positions. Extensive X-ray work on fetal monstrosities and malformations is now being done. Diagnosis of fetal death cannot be made by means of X-ray. O'Donnell, of Chicago, in 1912, stated that the diagnosis of pregnancy could be made by the X-ray as early as the fourth month, and Weil (1917) claimed a positive diagnosis at this time. Some observers have asserted even an earlier showing than this. Fornaro (1921) states that at three months he was able not only to diagnose pregnancy but also to determine presentation and position; Knegle (1921) makes the astonishing statement that in the third month the two femora, the umbilical cord and even the placental attachment may be clearly shown. Speidel and Turner (1924) conclude, however, that one need not expect to secure an X-ray picture of the fetal outline before the end of four months of pregnancy. The X-ray has no effect on the growing embryo or fetus, for the exposure is only slight.

Lipiodol as an Aid in Diagnosis of Pregnancy: Recently this preparation has been injected into the uterus (from 5 to 20 c.c. hot) for the purpose of establishing an early diagnosis of pregnancy. About twelve such cases have been reported abroad (Heuser, Dyroff and Hazelhurst). Very little has been done in this country. When there is positive evidence of pregnancy, there is a characteristic X-ray finding which the Germans call "atony of the uterus". This method should be employed only in the face of tuberculosis, cardiac decompensation and toxemias, and when a therapeutic abortion is being considered.

Rectal vs. Vaginal Examination: In recent years rectal examination during labor has be-

come a valuable agent in determining the degree of dilatation, descent, and consistency of the cervix. Those who advocate the rectal method claim that women who are examined vaginally more frequently have periuterine puerperal wound infections than do women who have only rectal examinations during labor. It is known that in pregnant women who have had no genital manipulation the vaginal bacteria do not produce puerperal sepsis. Williams and Harris, of Johns Hopkins, have recently shown, by taking cultures from the uterus while performing Cesareans on patients who had been in labor, that all uteri are infected after four hours of labor, whether the patient has been examined, or membranes intact or ruptured. However, the rectal method has not become a universal procedure, and the writer sees no serious objection in making at least one vaginal examination, if properly made, under strict aseptic precautions, for, by means of this route, one can definitely palpate the cervix and presenting part and arrive at a more accurate diagnosis. Repeated vaginal examinations should be condemned.

Kielland Forceps: In 1915, Christian Kielland, of Norway, presented a new type of obstetrical forceps before the Munich Gynecological Society. Since that time considerable literature has appeared regarding its use. By some it has been regarded as the greatest advance in recent years, while others have severely criticised it. This new instrument differs from the ordinary forceps as follows: Somewhat lighter in structure, sliding lock and is not fixed, and it has only an extremely small pelvic curve. The blades of the new forceps can be applied to the biparietal diameter of the fetal head, hence these forceps are especially applicable to cases where the head is high and the sagittal suture runs transversely. From 1908 to 1915, Kielland with his forceps delivered 352 women. In 1919, Storder demonstrated the new forceps before the Hamburg Obstetrical Society and praised them very highly. During the same year Puppel proclaimed the advantages of the forceps before the Medical Society of Mainz and said it was the obstetric forceps of the future. In 1921, Hoffman reported his results in six cases and was very enthusiastic about the new forceps. In 1922, at the meeting of the German Gynecological Society, Rosenfelt presented the results of a study of 135 cases in which the Kielland forceps had been employed. Delivery in nearly all the cases was very easily accomplished and without any damage. Fink states that in one case during the introduction of the anterior blade, the head was pushed upward, and delivery had to be effected by means of version and extraction. He reports another case in which the forceps showed a tendency to slip. He says that the Kielland forceps are unreliable and has collected fifteen cases from literature where delivery was completed with other forceps after the new instrument had failed. From the many experiences, however, the weight of evidence is much in favor of the Kielland forceps. Most authors agree that the new forceps do not slip, because there is equal pressure exerted over the skull; rotation is easily accomplished and less force is necessary for delivery. Nearly 50 per cent of the authors think that employment of the forceps should be limited to obstetric specialists.

Cesarean Section: Since the days of the old classical operations, several modifications have been added to the list in this method of delivery. Several years ago the extraperitoneal operation was in vogue, especially in doubtful cases of infection. Recently, the low cervical section, the transverse cervical and the longitudinal fundal section have their respective merits.

DeLee prefers local anesthesia for all Cesareans. He is enthusiastic about the low, or cervical Cesarean section (laparotrachelotomy) and considers this a standard for the abdominal delivery. He recognizes two main principles: limiting peritoneal exposure, and the location of the uterine scar in the neck of the uterus. Adhesions are less apt to occur and chances for the development of peritonitis are greatly mimimized.

Potter's Version: Although not universally used, it may be classed as one of the advances. No doubt it has its place in obstetrics in selected cases. Potter dedicates his book to the "woman in travail," in the reverent hope that her "hour" may be shortened, her "anguish" lessened and her "joy" made complete. He further states that at least 90 per cent of his cases are delivered by version, and in his last 938 cases (in 1922) he had no maternal mortality and a fetal mortality of 2.3 per cent not counting macerated and dead feti, or babies whose cords did not show any pulsation when delivery was started. The second stage of labor has been eliminated; the women have not suffered any of the pain usually experienced dur-

ing this period; the vagina and perineum have not been subjected to long hours of stretching, which resulted in quick retraction so that relaxed outlets with protruding and falling bladders and rectoceles did not occur in his patients. Potter further adds that his method of version is rather a logical advance and extension of a perfectly understood maneuver which has been made possible by the modern conception of asepsis with anesthesia. The writer is of the opinion that version should not be practiced routinely.

Episiotomy: When the vulvar ring is overdistended by the head, and laceration seems imminent, a ragged tear can be avoided by making a perineal incision in one of three ways: Vertical or median (straight towards the anus), oblique and transverse. The former is the easiest to repair and is the best under ordinary circumstances (Hirst). DeLee prefers the oblique. When a head remains on perineum for a long time after complete dilatation of cervix, there results such extensive damage from the pressure, anemia and overstretching of tissues, that the tissues do not return to their normal state during the puerperium. Henkel has during the past few years shortened the second stage of labor whenever possible. This he accomplished by splitting the perineum in the median line as soon as it bulges. All episiotomy wounds are made with blunt pointed scissors. There is a modern tendency towards episiotomy, more so than in former years.

Alpha-Lobelin: This preparation is the pure alkaloid of the lobelia, and was isolated in crystal form by Henry Weiland for the first time in 1918. The hydrochloride has been selected for therapeutic purposes. It has a distinct value in asphyxia neonatorum, and many babies have been saved by its use. It is usually given subcutaneously. Coramine, "Ciba", a newer preparation, used as a cardiac and respiratory stimulant may be injected in the heart muscle. In this connection, it may likewise be mentioned that small doeses of adrenalin and pituitrin directly into the cardiac muscle may be used in cases of asphyxia, respiratory failure and shock.

Nasal Application of Pituitrin: Since the discovery of pituitrin in 1911 by Hofbauer, the nasal application of this potent preparation has been likewise introduced into the obstetrical field. This same author, in collaboration with Hoerner, from the Obstetrical Department, and Oliver, laryngologist, all of Johns Hopkins, have in a recent article (August, 1927) recommended its nasal application for the induction of labor. Hofbauer states that this drug demands a constant attention for the succeeding twenty minutes. He further states the possibility of withdrawing the drug and thus preventing its further absorption as soon as the uterus passes into tetanic contraction, which renders the nasal application of pituitary extract the safest method yet available for obstetric purposes. Further clinical tests of this new method are being awaited with interest in obstetrical circles. Cumulative experience will accept or reject this method.

Some of the outstanding advances in the past few years have been made along therapeutic lines in connection with hyperemesis gravidarum, the various toxemias, and eclampsia; also in the field of analgesia and anesthesia. The use of fluids in vomiting of pregnancy is extremely important. According to Harding and Van Wyck, the theory of carbohydrate deficiency or glycogen deficiency of the liver as the cause of nausea and vomiting of pregnancy was first published by Duncan and Harding in 1918, and published in full by Harding in 1921. Titus, Hoffman and Givens published a similar theory. It became logical to treat such cases with carbohydrate in an attempt to supply any deficiency. Titus recommends glucose, and Thalhimer glucose and insulin. In this condition the patient is sent to a hospital. She is then given intravenously a filtered solution of glucose, varying from 5 to 25 per cent and from 150 to 800 c.c. Insulin may be given in this solution. Luminal solution, gr. 1½, should be given an hour before meals and at bedtime if necessary. Titus insists that insulin is not alone unnecessary, but actually harmful in hyperemesis. He says that conversion of the sugar will take place if only it be supplied. Insulin will cause a too rapid conversion and deplete the already scanty storage in the liver. C. J. Miller, of New Orleans, has been using glucose and insulin in the toxemias with good results, using glucose in 5 per cent solution, and giving one unit of insulin for every 3 gms. of glucose until 10 or 15 units have been given altogether.

Magnesium Sulphate in Treatment of Pre-Eclampsia and Eclampsia: In 1925, Lazart, Irwin and Vruwink, were appointed a committee of the Los Angeles Obstetrical Society

to collect and report on all cases which had been treated by the intravenous use of magnesium sulphate. In 1926, their record showed 142 cases. The accepted outline of treatment at present, in addition to the general measures employed, is the intravenous injection of 20 c.c. of a 10 per cent solution of magnesium sulphate. This nearly always gives immediate relief from subjective symptoms. During the stage of convulsive seizures the above injection will generally stop, or at least limit, the number of convulsions. It may be, and usually is necessary to repeat the injection, both for control of convulsions and for relief of the toxic symptoms. As a rule, one or two injections are sufficient, though sometimes as many as seven or eight in twenty-four hours have been given. The period of coma is greatly shortened. Maternal mortality from eclampsia is lowered and fetal mortality to a less extent.

Relief of Pain during Labor: Since 1847, when Sir James Simpson first used ether in delivery, amnesia, analgesia and anesthesia have come to the surface with many varied manifestations. Today, eighty-one years after the anesthesia was first employed, labor is still trying, frequently injurious, and usually an ordeal coupled with severe pains. Woman has endured this for many years, but with the modern tendencies—dress, mode of living, conduct, social activities and the like,—she is ever calling for help for some means of amelioration of the pains of childbirth. Recently, there have been many pain-relieving methods outlined, so that today her obstetrical suffering has been greatly reduced. Ether and chloroform are slowly being discarded except in home practice. Delayed chloroform poisoning should always be borne in mind. The much heralded "twilight sleep" of a few years back is now practically discarded by most physicians as a tragic failure, asphyxiated babies being the chief objectionable feature. In the past few years nitrous oxide and oxygen has held a rather prominent place in hospital practice. Recently, ethylene is being used with happy results, and seems to be more successful than nitrous oxide since it does not cause cyanosis, is more relaxing, leaves less headache and does not cause any more bleeding. The following simple drugs may be used as mild analgesics in selected cases; chloral, the bromides, heroin and chloretone. Frequently they give excellent results. Morphine, so efficacious in the first stage, is not always a satisfactory pain-reliever in the second stage, even with scopolamine or magnesium sulphate. Scopolamine is used chiefly with morphine in the first stage to produce semi-narcosis. J. P. Carter's objection to the use of scopolamine-morphine anesthesia is that it produces severe headaches, nausea and vomiting. For this reason he has substituted for it pantopon, gr. 1/3, with scopolamine, gr. 1/100, for the initial dose. A second dose of scopolamine, gr. 1/100, alone is given forty-five to sixty minutes later. Subsequent doses are from gr. 1/200 to gr. 1/400, depending on the individual case.

Sacral nerve block with novocain sometimes produces an immediate and rather deep anesthetic effect. Bonar and Meeker claim that the pains of labor may be entirely controlled by block of the second, third, fourth, and fifth sacral and the ano-coccygeal nerves. Relaxation obtained is often remarkable.

In February, 1923, Dr. James T. Gwathmey conceived the idea of softening the pains of labor by introducing a synergistic method which he called "obstetrical analgesia". He carried this idea to Dr. Asa B. Davis, of the New York Lying-in Hospital, and obtained his co-operation in carrying out a series of experiments. This method consists of the following: hypodermic magnesium sulphate (C. P.), 2 c.c. of a 25 per cent solution (with or without morphine), is given when cervix is dilated about two fingers, and repeated when necessary—one to three times. One or two hours later, rectal instillation (quinine, alcohol, ether and olive oil) is given, when the pains are four to five minutes apart and lasting thirty or more seconds, and when the cervix is dilated 2½ to 3½ fingers.

It is sometimes called the Gwathmey-Davis method. Dr. James A. Harrar, of the New York Lying-In Hospital, says that it gives relief to the agonizing part of the ordeal of labor. He states that they are employing it in over 100 cases each month, and find that it is applicable in 70 per cent of all labors. Hirst, of Philadelphia, says, of its use, that the patient may be so free from pain that her labor may go on with unsuspected rapidity. This, of course, can be regulated by more careful nursing.

DeLee says that the Gwathmey method has been tried at his hospital and proven so successful that its use is continued. Broadhead, of Harlem Hospital, states: "I consider the

method a great thing, for it relieves the mother not only during her labor, but during those long months of pregnancy when she is apt to develop a fear complex. Today this method has been employed in over 10,000 cases in many of New York's maternity hospitals, with good results, and apparently it is coming into general use throughout the country. This method produces approximately 'painless childbirth' ".

Conclusions

There is no doubt that all of our present methods can be improved upon, for there is no ideal one. There is, however, a definite place for a well selected analgesic in labor—one that at least can be called ideal,—and, when this is established, the fears and dreads of childbirth will be greatly lessened.

With the above as outlined, the practice of obstetrics is being continually stripped of most of its objectionable features, and the recent investigations will all tend to stimulate this field to a greater developmental expansion.

It is not until the pathologic aspect of obstetrics is fully recognized that we may hope for any considerable reduction of the mortality and morbidity of childbirth.

301 *East Franklin Street.*

ATELECTASIS OF THE LUNG—REPORT OF TWO CASES.*

By ELBYRNE G. GILL, M. D., Roanoke, Va.

The recognition and treatment of atelectasis or acute massive collapse of the lungs constitutes one of the most illuminating and valuable chapters in the entire realm of medicine.

In 1890, William Pasteur recognized and described massive pulmonary collapse found post-mortem in fatal cases of diphtheria. In 1908, Pasteur, in the Bradshaw lecture, first described massive pulmonary collapse occurring as a post-operative complication. The first case of post-operative massive atelectasis to be recognized clinically was described by Pasteur in 1910, and his articles of 1911 and 1914 record several typical examples of the condition.

Since this original description, the condition has been found associated with many other lesions. For this reason, Jackson and Lee[3] think that the term atelectasis or collapse of the alveolar tissue of the lungs describes more accurately this condition, as the bronchi are not collapsed.

Scrimger,[4] in 1921, reported the first cases of post-operative massive atelectasis to appear in the American literature. Since his report, forty-eight of these by different authors, describing this condition with case reports, have appeared in the American literature.

Many authors have differed greatly from Pasteur as to the mechanism whereby post-operative pulmonary collapse is produced, but all reports are in unanimous agreement about certain fundamental symptoms and signs which have been invariably present.

Etiology.

Scott,[5] in a recent monograph, states that the original cause of post-operative massive atelectasis has not been proved. The discussion of its etiology is still in the realm of hypothesis.

Jackson[3] suggests that the post-diphtheritic collapse, described by Pasteur and believed by him to be caused by a paralysis of the respiratory muscles, is really due to bronchial obstruction of the passages by diphtheritic exudate. Since this condition is found associated with such a variety of lesions, namely, occurring spontaneously in bronchial and pulmonary infections, non-penetrating wounds of the thorax, abdomen and lower extremities, in increased abdominal pressure associated with tumors, intestinal distention and peritoneal effusion, in postures immobilizing the thorax and abdomen, in nasal and pharyngeal diphtheria, in foreign bodies in the trachea or bronchi, and following operations upon the abdominal wall, it indicates that more than one etiological factor is involved.

Lee,[6] in a recent study of thirty cases of post-operative massive atelectasis, is persuaded that two factors were constant in practically every case: First, a thick, viscid bronchial secretion, and, second, some inhibition of coughing.

Clinical Signs and Symptoms.

The symptoms most frequently noted are pain in the chest, sudden sharp rise in temperature, pulse and respiratory rate, hacking cough and dyspnea of varying degrees. The

*Read before the meeting of the American Laryngological, Rhinological and Otological Society, in Washington, D. C., May, 1927.

severity of the symptoms depends upon the amount of the lung involved.

The classical physical sign is unilateral dullness with displacement of the heart and mediastinum to the affected side.

Differential Diagnosis.

This condition must not be confused with dilatation of the heart, pulmonary embolus, pulmonary infarct, pleuritis with or without effusion, pneumothorax and diaphragmatic hernia.

Treatment.

The treatment instituted will depend upon the etiological factors and the symptoms in the individual case. If a foreign body or thick viscid secretions are present, bronchoscopy is indicated. Some observers stress the importance of posture and the use of atropine.

Prognosis and Mortality.

The prognosis is good, unless complicated by bronchopneumonia. Pasteur, in 1914, recorded a group of 207 post-operative pulmonary complications in which he recognized sixteen cases of massive collapse, or a proportion of 8 per cent. Lee[6] is convinced that the proportion is far greater.

The writer wishes to place on record his observations in two cases of atelectasis of the lung. One was caused by an impacted organic foreign body in the right main bronchus, and the other by inspissated fibrin and mucus in the left main bronchus. No operative procedure had been done in either case.

Case 1. Patient, age thirteen months, was referred to us June 4, 1927, by Dr. F. L. Banks. The parents gave the following history:

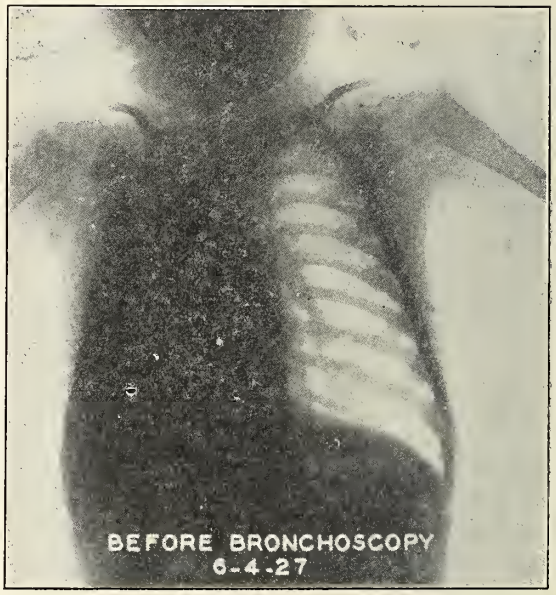
Two days previous to admission, child aspirated a pento bean. This was immediately accompanied by severe coughing and strangling. The child has had similar coughing spells at intervals since aspirating the bean. The child becomes very blue during the attacks of coughing and strangling.

Temperature on admission was 105 F., respiration 100, pulse 160. Physical examination showed complete dullness and absence of breath sounds over entire right chest. On inspection, a compensatory emphysema of the left side was easily observed, and the right side was retracted and immobile.

Examination of the nose and throat was negative. Blood count—W. B. C. 13,000; haemoglobin 65 per cent; polys. 50 per cent; lymphocytes, large, 2 per cent; small, 47 per cent.

X-ray examination of the chest showed cloudiness of the entire right lung. The heart shadow was obscured, as the heart and mediastinal structures were displaced to the right side. This presented a typical picture of obstructive atelectasis.

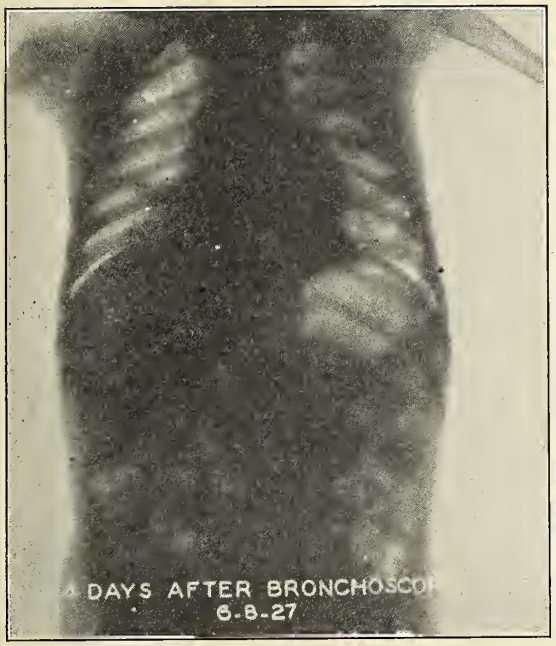
The child's condition was critical, and we realized that something had to be done immediately. The child was taken to the operating room an hour after admission to this hospital and the bronchoscope was introduced. The trachea and bronchus were filled with purulent secretions. After the secretions were



removed by suction, the bean was seen in the right main bronchus. It was impacted and there was considerable swelling of the mucous membranes around the bean. A portion of the bean was removed, but, due to the child's critical condition, we did not feel that it was advisable to prolong the operation. The secretions were profuse and the child was so exhausted we felt that a tracheotomy should be done so that the secretions could be aspirated through the tracheotomy tube. The operation was done while the bronchoscope was in the bronchus. The child was taken back to the room and the secretions were

aspirated through the tracheotomy tube, approximately every fifteen minutes, day and night, for four days. During this time the temperature ranged from 102 to 104 F., respirations 50 to 75.

X-ray picture number two showed the change that had taken place in the right lung since the first bronchoscopy was performed. This picture was taken four days after admission. Our second bronchoscopy was done on the seventh day, when we removed the remaining portion of the bean.



The child improved gradually from this time and was discharged from the hospital on June 25, and has since remained well.

Comment.

This case is one of an organic foreign body, and it very clearly demonstrates the extreme toxicity of this type of foreign bodies in the lungs of children. We feel that this child's life was saved by two measures which we followed: First, in not prolonging the first bronchoscopy more than ten minutes; second, in performing a tracheotomy. Had we been successful at the first bronchoscopy in removing the entire bean, a tracheotomy would still have been indicated, as the child, in its weakened condition, would not have been able to expel the profuse amount of secretions.

This child was kept alive for days by constantly aspirating the secretions through the tracheotomy tube. This was done by the use of a very small rubber catheter, introduced through the cannula, and suction applied. The secretions were thick and tenacious at times. In order to loosen the secretions, normal saline solution (ten to fifteen drops) was introduced into the trachea and bronchus through the tube every three hours.

Case 2. Patient, age 5, was admitted to the hospital January 19, 1928. The following history was obtained from the patient's family physician, Dr. A. H. Hoge, Bluefield, W. Va. The temperature was normal, respiration was about forty, dyspnea was marked and only a superficial examination was made of her chest at this time. A diagnosis of bronchial asthma was made and she was treated for this. Her symptoms, her mother phoned the following day, were much improved and I heard no more from her for four days. On January 17th I was notified that she still had intense paroxysms of coughing; between attacks she was all right. I was called again to see her on that date, and on careful examination found an almost total absence of breath sounds in the lower part of the left lung; child was immediately moved to the hospital, where an X-ray examination revealed a partial collapse, but no demonstrable body could be found in the bronchus.

On January 19th, Dr. Everett E. Watson, of Mount Regis Sanitorium, saw this patient in consultation, and his report is as follows:

The patient is well nourished and appears to be full of pep; coughs at intervals and the cough seems to be loose; temperature normal; pulse normal. On inspection, the left lung seems to be almost absolutely immobile. On percussion the entire left lung is flat, front and back, with hyperresonance on the right. Breath sounds are bronchial in type over the upper left, with increased w. v.; absent breath sounds at base, front and back. Following auscultatory cough no rales are heard, but bronchi are heard over the right upper lobe. Heart negative. Stereoscopic X-ray was made, which showed as follows:

The left thoracic cage markedly retracted. Mediastinum drawn considerably to the left and the diaphragm is markedly elevated.

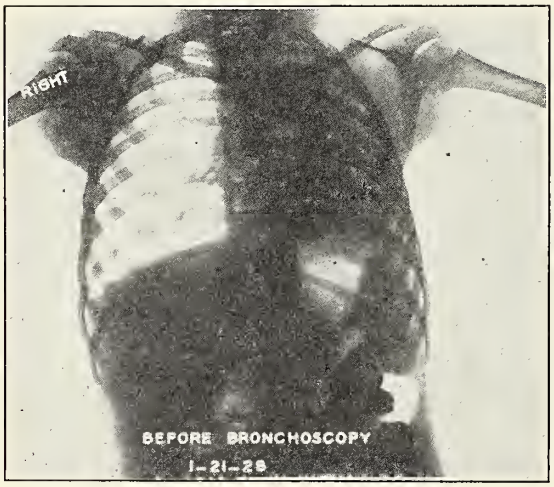
Left Lung—This lung is completely consolidated, the density being so great as to almost obliterate the rib markings.

Right Lung—Negative.

Interpretation—There is a massive atelectasis involving all the left lung. The etiology must be determined by bronchoscopy.

Dr. Arthur M. Shipley, of Baltimore, saw this patient with Dr. Watson and concurred in the diagnosis of massive atelectasis involving all the left lung.

On January 21, 1928, bronchoscopy was done without anesthesia, local or general. The mucous membrane of the trachea and bronchus was slightly inflamed. A moderate amount of mucus was present. A polypoid looking mass was seen, which completely obstructed the lumen of the left main bronchus. It was evident that the left bronchus was completely occluded, as it did not dilate and contract with inspiration and expiration. A bronchial cast about one inch long and one-eighth inch wide was removed by use of forceps and bronchoscopic aspiration. The removal of this structure restored the lumen of the left bronchus and the left lung was promptly re-inflated, as evidenced by the roentgenogram made eighteen hours later and by the physical signs. Time of bronchoscopy was ten minutes. The patient remained in the hospital for three



days following the bronchoscopy; during this time two paroxysms of coughing occurred which were controlled by codeine sulphate. No other symptom was noted.

February 2, 1928, eleven days after bronchoscopy, Dr. A. H. Hoge made the following report:

"I examined the patient yesterday, February 2, 1928, and so far as I can tell her chest is perfectly normal, and there is no difference in the breath sounds in the two lungs. She had right much dyspnea for several days after returning home, and during the first week coughed up a great number of large bronchial casts, but since that time she has had no difficulty whatsoever."

The specimen removed from the left bronchus was submitted to Dr. John Kolmer, Pathologist, University of Pennsylvania. His report is as follows: (a) The section of broncholith has shown that it is composed of inspissated fibrin and mucus with various bacteria and an occasional leukocyte and epithelial cells undergoing necrosis. (b) The smear shows the presence of a variety of organisms with a preponderance of staphylococci. I also found an occasional short chain of streptococci, various bacilli and rather large numbers of an unidentified mold.

The X-ray plate made by Dr. Hoge, as well as the physical examination three days prior to admission to our hospital, showed only a partial collapse of the left lung. This is an interesting observation and it confirms the experience of others in that the physical signs and symptoms depend upon the degrees of obstruction and the amount of lung tissue involved. Cases of this type present different pictures from day to day.

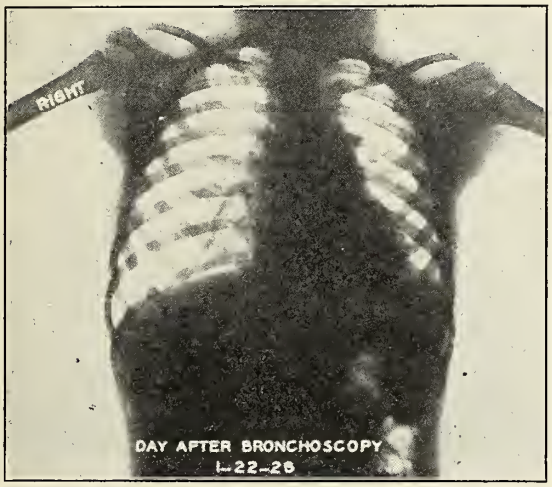
Lee, Tucker and Clerf, have contributed much to the solution of the etiology of this subject. They have been able to produce atelectasis experimentally in the dog by injecting secretions which had caused atelectasis in the human and also by injecting a solution of acacia pearls.

The writer attempted this experiment on the dog, but was not successful. Our technique differed from that of Lee's in that we did not etherize the dog or make any operative incision into the abdominal cavity.

April 8, 1928. Dog number one, a small terrier, weighing twenty pounds, was given 2¼ grains of morphine with 1/150 atropine hypodermically and 15 grains of veronal dissolved in 50 c.c. of water intravenously one hour prior to bronchoscopy. This produced rather profound anesthesia. However, to insure complete abolition of the cough reflex, the larynx was cocainized and 4 c.c. of 2 per cent solution of sterile butyn was injected into the trachea and right main bronchus. This produced a complete inhibition of the cough re-

flex. A 7 m.m. bronchoscope was then introduced and 12 c.c. of 100 per cent solution of acacia was injected in the right main bronchus. This apparently filled the bronchus. The dog was kept on the right side for three hours, and was then carried to the X-ray room where films were made. As the slides will show, these films do not differ materially from the control films.

April 16, 1928. Dog number two, the experiment was again performed, using the same dog. One hour prior to bronchoscopy, 2¼ grains of morphia sulphate was given hypodermically. The pharynx and larynx were carefully cocainized. Four c.c. of 2 per cent solution of butyn



was injected into the trachea and right main bronchus. The cough reflex was completely abolished. Fifteen c.c. of 100 per cent solution of acacia was injected into the right main bronchus with the dog lying on the right side. The animal was kept in this position for thirty minutes and then X-ray films were made again; they did not differ in appearance from the control films.

Comment

While our experimental work produced negative results, two observations were noted which may be of some value.

1. We did not make an abdominal incision into the peritoneal cavity, as was done by Drs. Lee, Tucker and Clerf in their experimental work on the dog.

In this connection it is of interest to note that the sixteen cases reported by Pasteur in 1914 all followed abdominal operations.

2. We did not use ether or any other form of general anesthesia. In each experiment immediately following injection of the acacia, the animal gave evidence of suffering pain, respirations were accelerated, and there was apparent compensatory emphysema.

Conclusions

1. Atelectasis of the lung occurs more often following adbominal operations under general anesthesia than from other etiological factors.

2. The true incidence of post-operative massive pulmonary collapse, and from other factors, has not been obtained, as many cases, regardless of the clear-cut signs and symptoms, pass unrecognized or are erroneously diagnosed.

3. The symptoms and signs depend upon the degree of obstruction and the amount of lung tissue involved.

4. Prognosis is good unless complicated by bronchopneumonia.

References.

1. Leopold, S. S.: Post-Operative Massive Pulmonary Collapse and Drowned Lungs, *Am. J. M. Sc.*, 167:441, 1924.
2. Scott, W. J. M.: Post-Operative Massive Collapse of the Lung, *Archives of Surgery*, Vol. X, pp. 73-116, January, 1925.
3. Jackson and Lee: Transactions of the American Surgical Association, Vol. XLIII, p. 723, 1925.
4. Scrimger, F. A. C.: Post-Operative Massive Collapse of the Lung, *Surg. Gynec. and Obst.*, June, 1921.
5. Scott, W. J. Merle, and Joelson, James J.: *Archives of Surgery*, Vol. 15, pp. 855-870, December, 1927.
6. Lee, Walter Estell; Tucker, Gabriel; Clerf, Louis: Post-Operative Pulmonary Atelectasis. Read before the combined meetings of the Philadelphia and New York Academies of Surgery.

TREATMENT OF FRACTURES OF THE SHAFT OF THE FEMUR.*

By E. M. TOWNSEND, M. D., Norfolk, Va.
Surgeon (R), U. S. Public Health Service, U. S. Marine Hospital No. 82.

This paper is primarily a review of the treatment of fractures of the shaft of the femur, methods of treatment, and results obtained in a series of twenty-seven cases occurring in 612 patients admitted for fractures, during the routine admission of 17,175 patients to the U. S. Marine Hospital No. 82, Norfolk, Virginia, all beneficiaries of the U. S. Public Health Service. The following tables illustrate methods of treatment, days in hospital, and results obtained:

*Read by invitation before the Norfolk County Medical Society, March 5, 1928.

Approved for publication in the Monthly by direction of the Surgeon General of the U. S. Public Health Service.

	Upper ⅓	Middle ⅓	Lower ⅓	Upper and Middle ⅓	Right	Left
15 Recent Cases	4	7	3	1		
Simple	3	3	2		3	5
Comminuted		3	1	1	1	4
Compound	1	1 G. S.				2

12 Old Cases with mal-union and poor results.

Simple	4	4	2			10
Comminuted		1			1	
Compound	1 G. S.				1	

Causes for Admission of 12 Old Cases	Treatment	Results; Improved	Able to Resume Prev. Occupation
Fracture of femur, followed by faulty union, ankylosis fibrous of knee.	3—Physiotherapy. 1—Manipulated under ether	1 1	
Faulty union and ankylosis of hip.	1—Physiotherapy.		
Ankylosis of hip and knee.	1—Manipulated under ether		
Angulation and partial anklysosis of knee.	1—Physiotherapy, refused open operation.		
Angulation and partial ankylosis of knee and removal of bone plate.	1—Refractured, angulation corrected, bone plate removed.		1
Removal of bone plate.	2—Bone plate removed.		2
Shortening and partial ankylosed knee.	1—Manipulation—ether. 1—Open reduction.	1	 1
Total	12 (Unimproved, 5)	3	4

The essentials of treatment are (1) training and experience, (2) equipment. No one should undertake the routine and special treatment of fractures without proper training and experience, and then frequent consultations will be necessary. There are few hospitals in this country thoroughly equipped to treat fractures. Segregation as practiced in England may be a solution of the problem in this country. It is at least a step forward for better fracture work. The equipment is numerous and expensive, and comprises a bed-side unit, orthopedic table, fracture beds, Balkan frames, splints, traction pins, and special surgical instruments.

The treatment has to be divided into three age groups: (1) Infants and small children, (2) the aged, (3) those between these two extremes. It is in the middle-age group that practically all of our cases fall. For infants the overhead suspension with traction applied to both extremities, with weights and pulleys, is probably best, and is well illustrated in an article by H. D. Somenschein (*Surgery, Gynecology and Obstetrics*, November, 1927).

The aged will not stand the strenuous treatment and long confinement to bed as the third class, but, if not too debilitated, they will stand skeletal traction and suspension. In this series the age varied from eighteen to sixty-nine years. Patient, age eighteen years, was in the hospital seventy-eight days, whereas patient, age sixty-nine years, was in the hospital one hundred and thirty-six days. Both had simple fractures, and were treated with Thomas splints and traction.

Every fractured femur presents its own peculiarities, and is a law unto itself, and the patient as well as the fracture has to be treated. I will only mention simple fixation, which suffices in a small percentage of cases, as green stick fractures, those with no displacement, and impacted fractures with fixation in good position. The class of fractures that we have

previously treated with Thomas splints and traction, namely, those with shortening and deformity that can be reduced without open operation, we believe can best be treated with skeletal fixation, traction and suspension. I believe there is a great tendency to get away

Method of Treatment 27 Cases	Case number.	Average days in hospital.	Recovered.	Unimproved.	Improved.	Deformities.	Inches shortening	Able to resume previous occupation.	Remarks
Thomas splint and Buck's extension.	5	138	5			1	½–1½	5	Usual cases with some shortening and deformities.
Plaster cast with skin traction.	1	91	1				½	1	Young adult with slight shortening.
Cast with no traction.	1	77	1				0	1	Impacted fracture; in good position.
Double incline plane. Recent case.	1	226		1		1	3		Comminuted fracture with Shortening and angulat'n.
Forcible manipulations.	3	120		2	1	3			1—Stiff hip and knee—unimproved. 2—Stiff knee—improved.
Refractured and corrected.	1	48	1				¾	1	Previously plated. Stiff knee and anterior angulation corrected.
Open reduction.	3	189	2		1	1	2–3	2	1—G. S. case—2" shortening 1—Old case with osteomyelitis and 3" overlapping—poor results.
Bone plating.	1	226	1			1	1¼	1	No infection.
Physiotherapy only. Old fractures.	4	38½		3	1	3			2—Had an ankylosed knee and hip. 2—Refused osteotomy and correction of deformity and angulation.
Removal of bone plates.	2	30	2				¾–1½	2	Plates were loose with small amount of callous present. 1—infected.
Steinman pins.	5	84	5				½–1	5	Less knee stiffness. 1—was compounded.
Totals	27	108	18	6	3	10		18	No mortality.

Fracture cases, all types	612	3.56%
Fracture of the femur (all male adults)	27	4.48%
Recent or acute cases	15	56.00%
Old cases, with poor results for treatment	12	44.00%
Results of treatment	27 cases	
Old cases, unimproved (2 refused operation)	5	41.70%
Old cases, improved	3	26.00%
Old cases able to resume previous occupation	4	33.33%
Old and recent cases able to resume previous occupation	18	67.00%
Recent cases unable to resume previous occupation	1	6.66%
Recent cases able to resume previous occupation	14	93.33%
Cases treated with skeletal traction and suspension	5	
Average days in hospital	84	
Cases treated with Thomas splint and traction	5	
Average days in hospital	138	
Cases treated with other methods	10	
Average days in hospital	140	
Days in hospital shortened per patient in acute fractures treated with skeletal traction and suspension	56	

from Buck's extension in this class of fractures.

Those that cannot be reduced under anaesthesia, and with skeletal traction and suspension, will have to have an open reduction, and here it is nearly always necessary to do an internal fixation, supplemented with external splints. Suturing will hold the fragments in a few cases. We use number four, twenty-day chromic cat-gut in preference to kangaroo tendon. Occasionally no internal fixation is required. After an open reduction, to have the fragments slip, places us in an embarrassing position; so it is safer to use some method of internal fixation. Inlay and chip grafts have a distinct place in cases of delayed or non-union; if the X-ray shows callus present, a plate can be used; if no callus is present, a chip of inlay bone graft is indicated. In all open operations on old infected fractures which have healed, operations should be deferred from three to twelve months after the infection has cleared up, and the skin should be sound and healthy, when operated.

Skeletal traction is usually accomplished with Steinman pins, Pearson tongs, the Finochiett's stirrup, or some modification of these. Skeletal traction has objections. It requires a surgical operation, and there is the possibility of infection. We now have on hand a case with infection of the soft tissues, non-union, and osteomyelitis, which was first treated with skeletal traction. This shows the necessity of a strict surgical technique.

We are now using skeletal traction and suspension on practically all of our fractured femurs, especially that case which we previously treated with the Thomas splint and traction. An anaesthetic is given, preferably gas oxygen, the skin cleansed, and a Thomas splint applied, the skin above and below the knee painted with tincture of iodine, and a point above the condyles selected. The skin is then incised for about one inch and the Steinman pins introduced at the upper end of the incision. Traction pulls the pins down and pressure atrophy of the skin and infection is prevented. The wound is now dressed with a sealed dressing and left alone. Frequent dressing invites infection. The Thomas splint is adjusted, and the leg suspended, with traction and countertraction applied. The foot of the bed is now elevated twelve to eighteen inches. The amount of weight depends on the shortening that is to be overcome, and the musculature of the individual. Generally about twenty pounds is applied at once, and a hypodermic of morphine and atropine ordered, to be repeated if necessary. The knee is now flexed, which facilitates reduction, especially in fractures of the lower 1/3. All this can be done with the patient on the fracture bed. The knee should be massaged and moved daily, as a stiff knee is the most frequent complication of a fractured femur. Continued traction and suspension after reduction is necessary until the fragments are fixed in position—generally four to six weeks. Then some form of external splinting is necessary. We apply a cast before removing the traction pins, and while the leg is suspended. Frequent checking of the position of the fragments with the bedside unit is necessary, and too wide a separation of the fragments at any time is to be guarded against; but an end to end apposition is necessary. Ten per cent apposition will suffice. Over-lapping must be overcome. Pressure pads are necessary. They are fastened to the rods of the Thomas splint, where necessary, and pressure brought to bear on the displaced fragments, thereby facilitating the alignment. The axial rotation must be corrected, the lower fragment and foot being rotated inward. The Steinman pins and the direction of pull tend to correct the axial deviation. Eversion of the foot must not be allowed. The normal weight-bearing line should be preserved.

I will not go into the theories of calcium metabolism, vibration, or thyroid secretion on the production of callus. We have found the introduction of venous blood at the site of the fracture and walking with support valuable in hastening callous formation. Sunshine and ultra-violet rays are likewise valuable. Diathermy is very helpful in alleviating pain, and to stimulate callus.

Three factors are necessary to stimulate the periosteum and endosteum to bone formation—(1) trauma, (2) active hyperemia, (3) tissue destruction, which acts to continue active hyperemia until bony union is complete. It is better not to remove bone fragments unless they are entirely separated, i. e., have no circulation, and obstruct apposition. I have frequently observed that the only production of callus occurring at the site of fracture would be from a fragment. Had these fragments been removed there would have been delayed, or non-union, necessitating more radical pro-

cedures, and would likewise have prolonged disability.

Summary

1. Treatment of fractures require surgical ability and equipment.
2. Immediate reduction, splinting and treatment of shock.
3. Reduction under anaesthesia.
4. Anterolateral and posterior X-ray plates, and frequent checking with the X-ray.
5. Compound fractures should be thoroughly cleansed, reduced, traction and suspension applied, and A.T.S. given.
6. Splints should be removed when the X-ray shows enough callus present, and weight bearing with support allowed.
7. Circular casts are to be avoided.
8. Frequent measurements for shortening should be made and recorded.
9. Open operations are to be avoided until skeletal traction with suspension has been given a fair trial.
10. Skeletal traction and suspension has shortened hospitalization in our series of cases.

References.

Fate of the Fragment: F. E. Clough, M. D., F. A. C. S. *Surgery, Gynecology and Obstetrics*, Volume 43, 1926.

A Skeletal Traction Clamp: J. Albert Key, M. D. *Surgery, Gynecology and Obstetrics*, Volume 42, 1926.

Fracture of the Femur: H. Earle Conwell. *Surgery, Gynecology and Obstetrics*, Volume 40, 1925.

Fracture of the Femur in Infants: H. D. Somenschein. *Surgery, Gynecology and Obstetrics*, November, 1927.

Practice of Surgery: Dean Lewis. Volume 2.

Influence of War Surgery on Treatment of Fracture in Great Britain: W. Rowley Bristow, F. R. C. S., London. *Journal A. M. A.*, December 3, 1927.

Fracture of the Shaft of the Femur—Diagnosis and Treatment: Kellogg Speed, M. D. *Journal A. M. A.*, December 3, 1927.

Operative Treatment of Fractures: C. L. Scudder. *Journal A. M. A.*, December 3, 1927.

Fractures: G. F. Cottle, Commander Medical Corps, U. S. Navy.

U. S. Naval Medical Bulletin, January, 1928.

AN ACUTE HALLUCINATORY EPISODE.*

By JAS. K. HALL, M. D., Richmond, Va.

I shall attempt to present a page out of the day's work.

The principal actors in the drama were three and the two men I shall name Timothy McGirt and Mr. Innominate, and the woman must be known as Viola Hastings.

The scene opens in a great Northern city, the home of my patient, Timothy McGirt. He was thirty-odd years of age, in good health, a highly efficient traveling representative for a corporation which has offices in every city and in almost every village in the United States. And Timothy McGirt was generously compensated for his services.

A little more than two years ago on a particular Monday evening at seven-ten, he boarded a Pullman in the Grand Union Station for an all-night up-state journey. In keeping with his custom, he retired early and he fell upon sound sleep promptly. At ten-thirty, he awoke. Immediately in the berth above him he heard a man and a woman making free and frequent and painful use of his name. McGirt recognized the voice of the woman as that of an acquaintance, Viola Hastings. The man's voice he did not recognize, and for that reason we know him as Mr. Innominate. Eventually his identity may be established. McGirt could hear Mr. Innominate cursing him, reviling him, calling him a weakling, and threatening to shoot him if he did not go back to Viola Hastings. And then McGirt could as plainly hear Viola Hastings in the upper berth with Mr. Innominate begging McGirt not to forsake her.

Timothy McGirt became increasingly alarmed on account of the threats of Mr. Innominate. He sought the porter, and demanded that the talking above be made to stop. But the porter only drew aside the curtains and disclosed an empty berth above McGirt's. The troubled passenger, bewildered and apprehensive, returned to his berth, but not to sleep. Again the couple in the berth above began to trouble him with their talk. The man, Mr. Innominate, constantly threatened to shoot him if he should leave Viola Hastings, and she implored him to come back to her again. McGirt went into a forward car for the Pullman conductor. The latter terminated the complaint by closing the upper berth, in which the man and the woman had evidently been traveling in the opinion of Timothy McGirt. Again McGirt went to bed. The man and the woman continued to talk to him and about him from the roof of the flying train. McGirt left his berth for the third time, took his bag to the wash room, but there was no escape. There the voices of the pursuing man and the woman seemed to come to him along the water pipes.

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*Read by invitation before the Richmond Academy of Medicine, March 27, 1928.

McGirt dressed, and at Noredo at a late hour of the night he left the train. In the station he could see but he could not hear the inaudible conversation between the Pullman conductor and the station master, and as the train began to move away the Pullman conductor cried aloud to the interrogative-looking station master: "Send him to Bugville." McGirt's alarm became transformed into terror and he dived upon the fast-moving train.

But he slept no more. Fear had taken firm hold of him. Into the dining-room of the little hotel of the small town in which he was eating breakfast the following morning there came again the voices of the man and the woman. Mr. Innominate cursed McGirt, and told what a fool he would be even to contemplate leaving Viola Hastings. And the pleading voice of Viola Hastings came to McGirt begging him again and again not to forsake her. In the small town McGirt visited a customer, transacted the usual business, and then from an upper room in a nearby residence came the voice of the woman begging that he come to her. But an old man on the porch of the house said in reply to a question that no woman was in the home. Then Mr. Innominate called out from a window that he was preparing to shoot, and McGirt ran to his customer and implored protection. In a few minutes a citizen in plain dress appeared, and as he questioned McGirt the citizen reached a hand back to a hip pocket. Then McGirt, in the hope of avoiding the violent death with which he had been threatened by Mr. Innominate, embraced the citizen and effectively pinioned his arms to his side. The helpless citizen told McGirt that he was the sheriff, and finally Timothy McGirt was taken to jail. There McGirt found out that the sheriff was only reaching for his handkerchief with which to mop his perspiring face. The identity of McGirt as a representative of the great corporation was established, and a doctor was called. The doctor kindly took McGirt to his home, sat up with him all night, heard again and again the story about the man and the woman who continued to talk to McGirt and about him all night long. A telephone call brought the next morning from New York City an official of the company who took McGirt back to Palermo. On the railroad journey down to the city Mr. Innominate cursed and abused and threatened to kill McGirt. He exercised a strange influence over McGirt. He could pump McGirt's heart, make it go fast or slow. He made numb-like sensations come and go in McGirt's arms and legs. He almost stopped McGirt's breathing. The strange man's conversation disclosed an intimate knowledge of McGirt's past, of his inmost thoughts, of his hopes, aspirations, and his fears. McGirt felt that if the strange man did not kill him, that eventually he would completely dominate him by his mysterious power. And Viola Hastings begged Timothy to come back to her and Mr. Innominate threatened to kill McGirt if he did not come to her. And the clicking of the rapidly rolling wheels of the train seemed to vocalize the thoughts and the fears of McGirt. Into the hotel in Palermo to which McGirt and his friend went came also Mr. Innominate and the woman. They occupied a room adjoining that of Timothy McGirt. They sawed out a square hole in the wall between the two rooms so that they could constantly keep McGirt under watch. Mr. Innominate would beg Timothy to stick to the girl and then threaten him if he should leave. McGirt saw Mr. Innominate take a check for $250 out of the pocket of his fellow-official of the company. And Mr. Innominate planned for the blame of the robbery to fall upon McGirt. McGirt went to the offices of his company. His malignant traveling companions—the man and the woman—followed him, and from the lockers and the toilet rooms of the offices they continued their conversation against him. With his friend from the company McGirt spent almost a week in the hotel. Although the doctor visited him daily and gave to him sleeping medicine each night McGirt slept not a wink night after night. He was told that if he slept he would be shot and that if he remained awake he would be chloroformed. All his thought processes were dominated by the strange man and the woman whom he had known. But he could not see them—the woman not at all. Once he caught a glimpse of the man—a portion of one eye, and a bit of the forehead, and a lock of the hair of Mr. Innominate. And from this glimpse McGirt inferred that the strange man was of middle age and that he had dark hair and dark eyes. And McGirt himself was of middle age and his own hair and his eyes were dark.

The father came up from a Southern city and took McGirt to his old home. But on the journey down to his old home went also in the same Pullman Mr. Innominate with his curses

and threats, and Viola Hastings with her pleadings. But McGirt could not see them. Sometimes they were in the car, sometimes on its roof, and again under the floor of the car calling to him, but he could get no sight of them. Mr. Innominate's malignancy seemed to increase, and just before home was reached he almost succeeded in hypnotizing McGirt. For a moment Timothy McGirt almost lost consciousness, and he realized with terror that if consciousness left him he would be wholly in the clutches of his enemy. His companions followed him to his father's house; they continued to threaten him, the man; and the woman to plead with him. McGirt was told by a neighbor that two policemen were stationed outside the house to protect him. But from the backyard the man threatened to shoot him. The woman at last demanded money of him. McGirt walked restlessly in his room. He sat at the desk as if writing a letter. While his father was not watching him he slipped three bank notes of twenty dollars each into each of three envelopes and flipped them out through an open window into the backyard. Then the couple demanded forty dollars more. But he had no more money and he tried to reach the telephone to call for police protection, but his father stopped him. A doctor came, gave him a shot in an arm; at eleven he fell asleep and he slept until seven. Upon waking he saw a man's head over the foot of the bed; he fled into his father's room and brought him back to see his pursuing enemy who had invaded the room. The head was that of the man who had been called in to watch over him as he slept.

At ten-thirty in the morning, he was admitted to the Sanatorium, and at that time he related in more elaborate detail his experiences which I have just narrated to you. And in the days that followed he told me more. He had been born and reared and educated in a Southern state—and in a religious home. His father was a God-fearing man, and his mother was a pious woman, and a single sister was the pride of the home. His parents did not know that his wife, whom he had married at twenty-four, was living apart from him, and that she was seeking a divorce from him.

For about a year before the occurrence of the hallucinatory episode on the train McGirt had been living as husband with a young woman whom he had met at a cabaret. Several times each week she gave a revue at a hotel. At her request he had given up his own apartment and had moved into hers. Their pseudo-married life had been happy. Not a single disturbing event had marred their pleasure in living together. She was educated, cultured, refined, and a lover of music. All went well. But one day, just before he heard the voices first, she told him that she had received a letter from her mother in San Francisco asking if she might come to New York to spend the summer with her daughter. He smiled, and remarked that he had better go back to his old apartment, but she replied that would be unnecessary as all three of them could easily live in her apartment. The young lady remarked that her mother would understand the situation, and would not object. He wondered. And as he boarded the train at the Grand Union, he still wondered, and soon he began to hear the voice of the man, Mr. Innominate, and the voice of the woman, Viola Hastings, with whom he had been living, in the berth above him. And he wondered why she was traveling with that man whom he did not know, and whom he could not see, and he wondered why they talked about him, and to him, and why they traveled with him, yet he could not see them.

"Did that man whom we call Mr. Innominate, seem to know much about you?"

"Everything, doctor, everything in the world about me, and I wondered how he knew so much about me and who he was. Nobody but God could know as much about me as that man knew."

"And what did you think of the young woman's willingness to bring her own mother into the apartment with you and have her to witness her own daughter's adulterous living with you?"

"I was surprised at her; my opinion of her changed; I felt disgusted; I thought of my own mother and my own sister."

"Did it occur to you that you could not continue to live in that apartment and that you would have to leave the girl?"

"No, I think not. I did not put my thoughts into words, but when I left the Grand Union that night I was troubled."

"Have you any idea who the man in the upper berth was who cursed you and who threatened to kill you?"

"Not the slightest. I could not recognize his voice, I could not see him, and I could not understand why the girl was traveling with him."

"Have you ever heard of a split personality?", I asked him.

"Yes, I read occasionally about that sort of thing."

"Do you think it possible that the man with the woman could have been the carnal part of yourself, and that the spiritual part of yourself was the you in the lower berth?"

"O, no, doctor: I don't believe in any of that fool psychoanalysis stuff. I read a good deal about it, but I think it is all spiffle."

"Think it over until tomorrow," I told him, "and come then and tell me if you do not think it likely that Mr. Innominate was the carnal part of you who did not wish to leave Viola, and that he was anxious to kill you, the spiritual part of you, your conscience, in order that he might continue to live happily with her."

On the morrow he came to me and he said: "Doctor, no man in the world but myself could have known as much about me as that man in the upper berth. He and I are the same man. I hear no more voices, I am leaving you. I am well."

"Go, my blessing is upon you. Do you go back to the woman?"

And he laughed loudly and long: "Hardly, she thinks I am crazy, thank the Lord!"

SURGICAL LIMITATIONS WITHIN THE ABDOMEN.*

By WADE H. ST. CLAIR, M. D., Bluefield, W. Va.

With the rapid advance of surgery in all its phases, and with the ease and comparative safety with which operations even of a major sort are performed, it is a question if the remarkable enthusiasm which has gone apace with so much progress should not be tempered by a critical investigation of what is real and what is fancy in the main problem of serving the best interest of the patient. It may be worth while, therefore, now and then to speak of certain limitations rather than to recite more achievement.

If the fact of exploitation is implied, the impression of pessimism is in no way intended. In attempting to draw the line of limit, in fact, there necessarily come many occasions to speak freely of those things in which surgery is a positive indication both as a life-saving measure and as a means of relieving suffering and restoring health. The idea is not intended likewise that the abdomen is the sole source of exploitation, for what applies in this particular field usually applies in varying degrees to surgery directed elsewhere. Pathological conditions, real or fancied, provoke here surgical intervention oftener, and the possibilities of over enthusiastic effort are many.

In making a survey, then, of those conditions within the abdomen for which surgery is directed as a curative measure, both for the surgeon and in the appreciation of the lay mind, appendicitis is easily of first importance. The acute case, allowing always for rare instances in which the clinical picture is obscure, is usually typical, and surgery applied reasonably early represents one of the most satisfactory conquests of disease. In the outspoken attack, the question of surgical limitation could hardly obtain, and we are more concerned with adequate operative technic and a diagnostic sense which brings the case to operation early and does not wait for severe secondary disease.

Acute appendicitis is obviously not always fulminating, and it is a common observation that infections within the appendix, often of appreciable severity, frequenty undergo resolution with every indication of a return to normal for the time being. Frequently there is a history of several such attacks in an individual patient, and in the interval the patient may be entirely free of symptoms or may complain of pain of varying intensity and constancy, and suffer from digestive disturbances which apparently have no other origin. In such cases operation is a definite indication, whether performed in an acute attack or in an interval to anticipate a subsequent attack, or for the relief as well of digestive disturbance. In the interval the appendix may or may not show palpable pathology, but in well chosen cases, where diagnostic study is painstaking and conclusions are not hasty and haphazard, these patients are relieved of their symptoms, and a useless operation is certainly the exception.

There is a third class of cases in which the differentiation of disease is not so clear, but in which surgery is often applied. Some of these patients complain only of right-sided pain and others of digestive disturbances alone. In none of them can a clear cut history be developed of an acute attack of appendicitis. It is possible undoubtedly that the pain rarely may have its origin in the appendix, but the same pain may as easily have its source in pathology of the urinary tract or may be the expression of

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many other things for which surgery is not an indication. Ordinarily these people are nervous, and the pain actually may be insignificant and exaggerated to the proportions of being surgical by the neurotic state of the individual. Digestive disturbances may be entirely functional or dependent upon some condition for which removal of the appendix has no effect one way or the other. But because the operation is easy and because the patient, usually possessing a bent for operation, knows that no serious danger is entailed, surgery is often resorted to, frequently without a serious effort to ascertain actually just what is wrong with the patient. It is extremely rare that the excised appendix is reported normal, and the case goes into the hospital records under the doubtful designation of chronic appendicitis. The appendix is often enveloped from base to tip in a fold of peritoneum, and this knowledge is imparted to the patient, but the patient may have been born with such an appendix, and it is doubtful if the situation represents real pathology. The surgeon's dilemma is made less difficult by finding a Jackson's membrane or a Treves' band, and a surgical conscience is eased by the fact that an abdominal exploration was at least possible and no other pathology was found. The patient is rarely told that the appendix was as normal as any other structure. The subject operated on has had an experience and a rest of two weeks in bed and is obviously improved for the time being. In the vast majority of such cases surgery has been resorted to beyond a logical indication, because clinical evidence of a diseased appendix has been insufficient and because of the most important factor of not curing the patient.

Second in importance to the appendix, both in frequency of occurrence and the ability of the surgeon to relieve pain and disability, are pathological conditions developing in the biliary tract. In these conditions there is often acute disease, but operation is rarely an immediate necessity and surgical effort is nearly always deliberate. In arriving at a decision to operate, the outspoken expression of disease is biliary colic, and as justifying surgical intervention the most constant and concrete evidence of pathology is the presence of stones. This is elementary disease, and where surgery is directed for the relief of definite attacks of true biliary colic or for the relief of a less well-defined expression of disease, which nevertheless reveals the presence of stones when the abdomen is opened, there is no occasion to find fault with surgical effort. It is the experience of every surgeon that in such cases uniformly good results follow.

The idea is not intended to be conveyed that the presence of stones represents the only concrete evidence of disease, and that operative effort always goes astray when directed to non-calculous disease. The increasing proportion of cholecystitis without stone, however, coming to operation and constituting a part of statistical reports indicates that the abdomen is explored and surgery directed to the gall-bladder with a great deal more temerity than formerly. Thickened and contracted walls, pericystic adhesions, enlarged lymph glands, and papillomatous and "strawberry" gall-bladder constitute well-defined pathologic processes, some of them as definitely pathologic as if stones were abundantly present; but where the increasing proportion of non-calculous cases is so manifestly evident, the question arises, how often surgery is directed to a gall-bladder—only problematically the seat of disease.

The crucial test of any operative effort is the fact of whether or not the patient obtains relief of symptoms for which the operation was directed. In the case of the excised non-calculous gall-bladder, one finds many times in the literature honest confessions that a large proportion of patients are not relieved of their symptoms. The chronic "dyspeptic", often the subject of gall-bladder excision, has always been a problem for both the internist and the surgeon, and any method which demonstrated or excluded actual pathology was welcomed. Transduodenal drainage offered some possibility of cytological study of the bile and the determination of infection of the bile stream, but as a certain diagnostic method it has not been practical to any appreciable extent. The later work of cholecystography of Graham by which, through the intravenous and oral administration of certain dyes, the outline of the gall-bladder could be visualized and its emptying capacity studied, has become a routine procedure in borderline cases and has been received with an immense amount of enthusiasm by X-ray workers. Possessing undoubted value and representing a distinct advantage over older X-ray methods of examination, we doubt if the information obtained from a Graham test alone is trustworthy in a decision to operate, or that the practice should alter

materially the effort prompted by a painstaking clinical history.

When dealing, then, with definite disease of either the appendix or the biliary tract, surgery is a positive indication, and there is no substitute procedure. Failure to cure is ordinarily attributable to inadequate diagnosis and directing operative effort for pathology which does not exist. The same principle does not obtain when applied to the treatment of gastric and duodenal ulcer. Therapy of any kind applied here and measured by results obtained at the present time is only relatively satisfactory, and the claim from whatever source that peptic ulcer is wholly surgical or entirely medical is inadequate and does not improve the confusion.

There is no chronic condition within the abdomen where clinical recognition, made certain as to location by adequate X-ray studies, is so positive as that of peptic ulcer, and a failure to know accurately that an ulcer is present is the rare exception. With this development of accurate diagnosis, our knowledge of the etiology and the nature of ulcer has not gone apace, and, although there are many theories as to causation, they do not explain adequately the origin of ulcer, and many such theories are purely fantastic. Not knowing, then, the actual cause, it is evident that there is no specific therapy, and treatment, medical or surgical, aims at a relief of symptoms and in a certain proportion of cases the actual healing of the ulcer. The oldest operative effort, and for a long time practically the only procedure, was gastro-enterostomy. No claim has ever been made that this operation is physiological, and among the most enthusiastic advocates of surgical treatment the operation in their own estimation must not be productive of satisfactory results, because many of these same people are now resorting frequently to the more radical procedures of pylorectomy and resection of the stomach where such operations are possible. The complete removal of the ulcer is effected in this way, but it is doubtful if the unpleasant and dangerous sequels of stomach surgery are lessened, and immediate mortality must be perceptibly increased.

In the confusion of conflicting claims, one finds certainly much difficulty in knowing positively what method of treatment of ulcer serves the best interest of the patient. Speaking for one of the largest clinics in the world, Balfour, in 1924, made the statement that "in large surgical clinics where gastro-enterostomy is the operation of choice for chronic duodenal ulcer, satisfactory results are reported in from 80 to 90 per cent of cases." This optimistic statement is backed by information concerning the present condition of 1,000 patients who had had gastro-enterostomy done at the Mayo Clinic, in which an operative mortality of 2 per cent is admitted and in which 88 per cent of cures is claimed. Gastro-jejunal ulcer was a sequel in 3.5 per cent of the cases. These statistics are more or less typical of those reported by various other surgeons who are enthusiastic advocates of surgical treatment, and, in the light of such satisfactory results, one wonders why there should be contention at all about a choice of methods to pursue. Unfortunately, from numerous other clinics, whose work demands the same consideration for thoroughness and whose efforts must be accepted as equally sincere for the best interest of the patient, reports do not indicate such flattering results. Immediate mortality is reported as high as 10 per cent, and it would be interesting to know positively the unreported mortality in all operative effort. In series after series, reports are available to show symptoms have not been relieved in so high a proportion of cases, and often failures have amounted to 50 per cent of a series. In one instance the serious sequel of secondary ulceration had an incidence of 34 per cent. Increasingly often one hears a surgeon who has done many operations for ulcer openly acknowledge that present surgical practice is inadequate and that, within certain limitations, peptic ulcer is really a medical condition.

The surgeon who is most enthusiastic in advocacy of surgical treatment of ulcer is in the habit of creating the impression that the patient left to medical treatment may die of a fatal hemorrhage, or that he may develop cancer, or that a fatal perforation may occur. We are well aware that hemorrhage may be a serious complication, but it is surprising to one who investigates seriously to find how well these hemorrhage cases are controlled by medical measures and how satisfactory the subsequent progress of the case becomes. It is conceded, of course, that certain cases of bleeding do require surgery for control, but the internist is as fully aware of this as the surgeon, and concedes readily such a case to be operative. For actual cancer of the stomach, surgery obviously is the only means we have of dealing

with this condition, but to assume that the patient faces the danger of developing a cancer merely because he has an ulcer is to produce apprehension without cause. We know that cancer never occurs in the duodenum, and even in the stomach, where its occurrence is frequent enough, we have no positive evidence that an ulcer there ever undergoes malignant degeneration. The patient may quite readily have a fatal perforation, but a large proportion of perforations occur in rapidly developing ulcer in patients who have had no previous symptoms, and in these cases it is certainly difficult to conceive how surgery or any other treatment would anticipate a calamity like this. No one denies that surgery is indicated immediately in a case of perforation, but adequate medical measures are capable to a great degree of safe-guarding a patient against such a complication, and certainly the patient who has been on a medical plan has been warned of the significance of severe, agonizing pain, and may be expected to obtain immediate surgical treatment under such circumstances.

In the present day practice of group medicine, there is a great deal of talk about co-operation between medicine and surgery, but in the particular phase of peptic ulcer there is antagonism, rather than co-operation. Admitting the large per cent of failures following surgical effort, and appreciating the equal effectiveness of a medical plan with no immediate mortality and no glaringly serious and dangerous sequels, the fact has to be conceded that gastric and duodenal ulcer are in no way primarily surgical diseases, and that they become surgical only secondarily in the presence of a complication, like perforation or hemorrhage, or where adequate medical treatment has failed, notably in the case of pyloric obstruction due to scar tissue.

It is obviously impossible when speaking of surgical limitations within the abdomen, to include the whole field of endeavor. The female pelvis belongs really in the scope of abdominal surgery and itself is a prolific field of surgical exploitation. It was in this phase of abdominal surgery that a conservative attitude became manifest first, and operative effort is now limited almost to dealing with inflammatory processes, ectopic pregnancy, and the removal of new growths. The importance of operation in dealing with intestinal obstruction from whatever cause needs no mention, and useless surgery in such a situation is hardly conceivable. Surgery of the spleen is interesting in exhibiting efforts both useless and curative. Splenectomy, practiced for a time for leukaemia, is now an obsolete operation, while removal of the spleen in familial jaundice and in chronic purpura represents a definite curative procedure. Various devices directed for the correction of visceroptosis, short-circuiting operations, excision of the colon, and various other procedures of a radical nature are mentioned merely as nearly always representing useless and dangerous surgery.

The position of a surgeon in his community is one of importance and usually of singular distinction. In addition to possessing a requisite amount of skill for the technical performance of his work, he must possess judgment of an unusual sort, for, even though the decision to resort to surgery in a given case is the work of a group of which he is merely a part, his position places upon him the principal responsibility. By the very nature of things his activities are almost unrestrained, and a great confidence implied is best rewarded by a judgment which is directed by conscience as well as wisdom and in which no other influence plays a part.

REPORTS ON SEVEN CASES OF RESISTANT PSORIASIS.*

By LEE McCARTHY, M. D., Washington, D. C.

Today it is generally admitted that the most beneficial and advantageous treatment of psoriasis is the X-ray, used in doses varying from 1/8 skin unit to 1/4 skin unit, depending upon the thickness of the lesion. The advantages of this treatment are obvious: cleanliness, and much greater rapidity of action than that obtained by the use of ointments locally and arsenic by mouth or intramuscular injections. X-ray in these small doses, used at intervals of a week for three or four applications, is all that is needed in the very large majority of cases, and such use of the X-ray is absolutely harmless.

Ultra-violet light will clear up 20 per cent of the cases if a large number of exposures (twelve to fifty or more) are given. The inflammation and dryness caused by these treatments are a great disadvantage. The other 80 per cent of the cases seen in routine practice will not respond; often new lesions will

*Read before the Hippocrates-Galen Society, Washington, D. C., November, 1927.

appear in areas which have had heavy exposures, and at this point ultra-violet light should be acknowledged a failure.

Generalized psoriasis that resists practically all known forms of treatment is rather unusual. However, in the past two years I have seen seven such cases, and I believe my experiences with them will be of interest to you.

Four of these cases were referred to me as follows—two cases by an X-ray man who had treated them at intervals for three years with fair success during the first two years and absolute failure during the third year. These two cases had become resistant to the beneficial action of X-ray. Of course ointments, intravenous and intramuscular injections, oral administration of arsenic, etc., had been tried by the general practitioner before the cases were referred to the X-ray man.

Two more cases were referred to me by dermatologists who had used X-ray, ultra-violet light, intramuscular injections, etc.

The last three cases occurred in the course of my own practice and, like the above four cases, had been treated by diet, arsenic, general hygenic measures, etc., before being referred by the family physician. It is of interest to note here that psoriasis may become resistant to X-ray after its use in one or several outbreaks; also that X-ray, radium, ultra-violet light, may not influence the eruption even at the very beginning.

With the failure of the ordinary methods of treatment, one must resort to the less sanctioned ones. Accordingly, in the first two cases I used autohaemotherapy—sixteen injections of the patient's own blood to the amount of 15 c.c. being withdrawn from the veins and immediately injected in the buttocks twice weekly. The result of these injections was a dismal failure!

Then, in going over the German literature, I noticed that Dr. Urban, in Budapest, had used a substance known as ektobrom in acute generalized psoriasis with great success. Ektobrom is an isotonic 4 per cent sugar solution containing 10 per cent of sodium bromide. Ten c.c. of the solution is given intravenouly every third or fourth day for sixteen injections, and the patient received about one gram of sodium bromide at each injection. The beneficial action of this drug has been variously explained: Ledejew believes that it acts on the central and sympathetic nervous system; Siller and Liebuer think it changes the colloidal content of the blood. A supply of this drug was received from Germany two years ago and injections were given to seven cases herein reported.

Case 1. White, female, age 19. Case of gyrate psoriasis of universal involvement with the exception of face, scalp, and hands. The patches were very thick, dry, fissured and bleeding, causing flexion of the extremities to be very painful. A good deal of dryness was due to the large amount of X-ray that had been used during the past year with the hope that larger doses would duplicate the success of the first two years. This is a mistake for lesions that will not respond to ¼ unit of X-ray will not clear up under heavier dosage. After two injections of ektobrom, the skin was less dry and the larger patches began to desquamate and fade out in the center. After fourteen injections the eruption had completely disappeared, although the lesions showed considerable brownish pigmentation. During this period no drugs were taken and only olive oil was used locally. The patient was seen last week and there had been no recurrence during thirteen months.

Case 2. This patient, whom I have persuaded to come here tonight, came from a dermatologist who had tried X-ray, ultra-violet light, and had used six intramuscular injections of a French preparation known as enesol. There was not a square inch of this boy's body not involved. The lesions on the scalp were ¼ to ½ inch in thickness. He was given twenty injections at bi-weekly intervals, and began to improve after the tenth injection. You will see what this form of therapy did for him. He has now only an occasional lesion after eleven months.

Cases 3, 4, 5 *and* 7 were white adults, 24, 25, 29 and 39 years old, and presented nothing unusual. The eruption was less extensive, but of the same hard brittle fissured and bleeding type. These cases were given the usual course of injections of ektobrom and have been free for over seven months.

Case 6, a white woman, sister of a doctor, had psoriasis and arthritis for twenty years or more. X-ray had always controlled the attack until last year. In this case the dryness and fissuring of the lesions caused such bleeding upon movement that the patient had to give up her office position.

The interesting point in this case is the accompanying arthritis of the knees and elbows which, having resisted all treatment for over six years, cleared up at the same time the eruption disappeared after twelve injections of ektobrom. The patient has been well without a recurrence for nine months.

I might add that these injections of ektobrom are not followed by any local or general reaction.

References.

Die Intravenose Bromotherapie bei Hautentzundungen: Urban Frank, *Der Praktische, Arzt*, Vol. 22, 1926.

A. J. Ledejew, *Dermat. Wschr.*, 1924, No. 35.

Siller and Liebuer, *Borzyogyezcti Urol. Jz.*, No. 3, 1925.

1705 *N Street, Northwest.*

THE IMPORTANCE OF AND THE DIAGNOSIS OF SYPHILIS IN THE PRIMARY STAGE.*

By J. M. BAILEY, M. D., Hopewell, Va.

The prognosis of syphilis like that of chancre is intimately concerned with an early diagnosis. The vital importance of early diagnosis and treatment of syphilis should be deeply engraved on the mind of every physician. In the light of our modern knowledge of syphilis, the means at our disposal for an early diagnosis and the valuable therapeutic agents at our hands for treatment make it a deplorable fact that the disease is frequently diagnosed by the appearance of the secondary lesions. The time is at hand when the secondary eruptions of syphilis should be a dermatological rarity. The only excuse is to be found in the fact that a patient with secondary syphilis commonly gives the history of having "chancroids" which were burnt with caustics before an opportunity was given to the physician to correct the diagnosis. The question may therefore be asked, who first sees and treats the majority of patients with primary syphilis. The answer usually is "quacks", the corner druggist, or the physician who as a routine treats all genital lesions with caustics and entirely neglects the valuable means at hand to diagnose syphilitic lesions, or is ignorant of these methods. It may be stated that the future of a syphilitic patient depends upon the knowledge and training of the physician first consulted.

The means for the diagnosis of primary syphilis are: Clinical features of the chancre, the demonstration of the Spirochaeta pallida by the dark field microscopic examination and the Wassermann reaction.

The Clinical Features of a Chancre

The morphology of the chancre varies greatly, not only in different locations, but in the same location. The text book descriptions usually give what might be called "classical chancres", which portray to one's mind a dominant type of chancre, whereas in many chancres all of the features of classical chancres are not necessarily present. Time does not permit to present properly all the classical features of the chancre, but the following embrace some of the main points:

Incubation Period.—The usual incubation period is given as three weeks, but it may vary from fifteen to thirty days.

Multiplicity of Sores.—There is a deeply rooted and widely prevalent view that the chancre is rarely multiple, but the percentage of multiple chancres is around 20 per cent.

Non-inflammatory Oedema.—When present, this oedema is a valuable aid in diagnosis. It may involve the area surrounding the chancre or the whole prepuce. It is due to a blocking of the lymphatics and frequently causes a phimosis unaccompanied by balanitis. The skin is of a dull livid red or bluish tint. This is present in about 10 per cent.

Size of Chancre.—It varies from a pinhead to a silver dollar.

Pain.—Unless the chancre is inflamed by secondary infection, it is not painful, not tender, not inflammatory and without a surrounding halo of inflammation.

The earliest clinical appearance of a chancre, regardless of its location, is a minute sharply rounded hyperemic area which after a short period becomes a superficial abrasion and, on account of its insignificant appearance, is frequently undiagnosed. The surface is round, about five cms. in diameter, sharply marginated, smooth and polished. The following changes take place as time passes: The abrasion enlarges, otherwise the sore remains unchanged. Early induration is absent, but it has the redness of raw beef. Its periphery is sharply marginated, flat and flushed with the surrounding parts. There is a considerable amount of serous secretion present which is a valuable diagnostic sign. The appearance of the chancre may be attended by induration,

*Read at a meeting of the Post-Graduate Medical Society of Southern Virginia.

which may develop beneath its surface in such a manner that the sore is raised above the level of the surrounding parts. This is called a papular chancre.

Induration.—Not all chancres become indurated. When induration is present, it is a valuable evidence of syphilis. The induration may appear early or late in the primary stage; the older the lesion the more likely the induration. As a result of pyogenic infection, the induration may decrease or disappear entirely.

Pyogenic Infection.—Pyogenic infection of a chancre changes the appearance. The surface may be superficially infected, in which event it becomes covered with a yellowish membrane which conceals the beefy floor. The pyogenic infected chancres are painful and inflamed.

In all cases of genital sores and suggestive lesions elsewhere, the lesion should be dressed with boric acid solution until the diagnosis is established beyond a doubt. The use of "caustics" and anti-syphilitic drugs causes a disappearance of the spirochaetes and negatives the Wassermann, both of which reappear after the medication is discontinued. When the dark field examination is negative, the application of alcohol may bring positive results. Within ten days after the initial lesion the dark field examination is positive in 93 per cent of the chancres. This decreases as time elapses. In case of phimosis, the dark field examination may be entirely unsatisfactory.

The Wassermann reaction is positive in about 75 per cent of the cases thirty days after the initial lesion. The chancre fluid will give you a positive Wassermann test from two to three weeks before the blood. The final negative Wassermann cannot be accepted as trustworthy until nine weeks after the initial lesion.

Every physician should be impressed with the following dictum: Every venereal sore should be regarded as syphilis until it is proved otherwise. Indeed, this applies to extra genital lesions, particularly of the lip, that do not heal readily, and the physician should consider every chancroid as a protential chancre until proven otherwise.

I am going to report a few cases which will demonstrate the importance of the diagnosis of primary syphilis. It not only saves the patient financially, but relieves him of suffering and assures him a complete eradication of the disease.

Case 1. Patient was complaining of gastro-intestinal symptoms. Examined by internist who returned the diagnosis carcinoma of stomach, which was confirmed by X-ray. Patient operated on the next day. The surgeon became suspicious of the lesion and removed a lymph node for pathological examination, also blood for Wassermann. Both positive. Anti-syphilitic treatment resulted in improvement.

Case 2. Patient had a chronic ulcer over external malleolus which was treated locally with temporary improvement, followed by reappearance of ulcer. In addition, the patient had pains in various parts of the body which would suggest almost any disease known in medicine. Examination revealed in addition to the above. Argyll Robertson pupils, increased knee reflexes, ankle clonus. From her history she had received twenty-five treatments of 606, in addition to numerous treatments of mercury and bismuth in 1923. Patient was put on anti-syphilitic treatment with healing of ulcer but the other symptoms did not improve. Wassermann two plus in above case.

Case 3. Patient came into my office with history of slight injury to leg a few days ago. He treated it with home remedies without improvement. Examination revealed a tender spot over middle of anterior surface of tibia, and surrounding oedema. X-ray negative for fracture. Blood four plus and history of chancroids two years ago treated with caustic. Anti-syphilitic treatment given with general improvement of health.

REFERENCES.

Tice—Practice of Medicine.
Pusey—Principles and Practice of Dermatology.
Morton—Genito-Urinary Diseases and Syphilis.

ORBITAL CELLULITIS FOLLOWING POWDER BURN OF CONJUNCTIVA: CASE REPORT.*

By JAMES T. SHELBURNE, M. D., Critz, Va.

On September 3, 1923, I was called by a physician to see a patient whom he said had very suddenly developed a very bad eye, and found the following conditions:

E. H., boy, aged fifteen years, temperature 103, pulse 120, right eyeball pushed out between lids, the degree of exophthalmos almost amounting to a luxation of the globe. Lids and conjunctiva red, edematous and painful. There was diplopia, dimming of the vision and fixation of the eyeball. There were also

*Read before the Virginia Society of Otolaryngology and Ophthalmology, at Newport News, Va., Spring, 1928.

a few bluish specks on upper outer surface of the orbital conjunctiva. The patient for the past few days had suffered intense pain over right frontal sinus. No history of acute cold or recent acute infectious disease. The exophthalmos and redness of lids was first noticed on the morning of the day I saw the patient. Three weeks previous to onset, patient in company with another boy was loading a pop bottle with black gunpowder with a fuse attachment to blow fish out of a pond when his companion, attempting to light a cigarette, ignited the powder, causing it to blow out and some of the grains struck the patient in the eye. This caused a very slight burn which was not treated at the time.

We moved the patient to the hospital where after X-ray and transillumination, examination of sinuses was made and found negative. Under general anesthesia, I made an incision along the upper orbital margin, dividing the periosteum and separated it back with a bone elevator. Inspection of the orbital roof was negative. Incision through the periosteum well back of the eyeball was made and a large amount of serous drainage was obtained and a small tube left in place. I also made a similar incision along the lower orbital margin and separated the periosteum well back of the eyeball. A large amount of pus and serum was obtained and a small rubber drain left in place here. Patient's condition on the following day was much improved. and he left the hospital on the tenth day, but drainage and dressings had to be kept up for several weeks. The patient was examined at intervals of two months for a period of two years, and once a year since then, and there have been no bad after effects noticed.

Summary.

The most common cause of orbital cellulitis is accessory sinus inflammation and the most violent types occur with facial erysipelas.

Infection may be conveyed by means of septic thrombosis, thrombophlebitis, lymphangitis and by a metastasis.

In treating cellulitis, I favor early and free drainage. I do not think we should wait for suppuration and pointing of the pus before establishing drainage. In case of doubt, I believe one is justified in doing exploratory orbital incision and investigating the bony walls and cellulose and fatty tissue, especially in cases where there is optic nerve involvement of an unknown etiology.

Correspondence

Tubercular Bacillus Vaccine as Preventive Treatment in New-Born.

To the Physicians of Virginia, Especially Those Who do Obstetrics:

Seven years ago the Pasteur Institute of Paris, France, began the use of an attenuated Tubercular Bacillus Vaccine to be used as a preventive treatment in the new-born. In the September 8, 1928, issue of "*The Journal of the American Medical Association*" there is an abstract which states that during those seven years over 300,000 doses have been used with no bad effects, and according to their records with marked benefit to the infant in the reduction of tuberculosis.

Eighteen months ago I obtained from Dr. Calmette permission to use this vaccine. Dr. William Litterer, of Nashville, Tenn., was kind enough to undertake its preparation for me. Just recently the stage of the preparation of this vaccine was reached at which we could begin its use. It is indicated first within the first ten days of life of every infant born in tuberculous surroundings. To these infants, preparation is given by mouth in three doses on the fifth, seventh, and ninth days of life. Its use has also been extended to older children and adults who are exposed to tuberculosis but who, after careful examination and two negative tuberculin tests, are proven not to have been infected. The latter class should not be treated, however, except in Tuberculosis Clinics.

I have begun the use of this preparation in Nashville and, because of the fact that so much more can be manufactured each time than is needed here, I would like to give the physicians of the state opportunity to use it in their practice if they care to undertake it. If any of you expect to deliver a child from a tubercular mother or one that will be exposed to close contact with some other tuberculous member of the family, you should first gain the consent of the parents and then notify me just as soon as the child is born and, if possible, I will send you the three doses with instructions. The reason I said "if possible" is that

the vaccine that is made up at any one time is supposed to be used within ten or twelve days after its preparation. We expect to prepare it at regular intervals but, of course, might at some time not have any ready.

John Overton, M. D.
City Health Officer.
801 *Demonbreun Street,*
Nashville, Tenn.

Miscellaneous

"Trench Mouth", or Vincent's Infection.

Vincent's infection, or "Trench Mouth", was first noticed about 1897, and has undoubtedly been more or less endemic since that time. It was not until the World War, however, that the disease took on epidemic form. In France, during that war, the condition, given the name of "trench mouth", at that time, was more common than were typhoid and malaria during the Spanish-American War. It was quickly recognized by the dentists with the troops; but, owing to the cramped living conditions in which the troops lived, it continued to spread. Many soldiers with infections of the mouth and pharynx were sick in hospitals and in quarters. Since the World War it has seemed to spread slowly through the States, or perhaps has been more promptly recognized.

Vincent's infection may present itself in the mouth or as Vincent's angina in the throat, or the two may be present together. It is believed to be due to the combined action of two varieties of the same germ. Inflammation and the formation of ulcerative areas of greater or less magnitude, located on the mucous membrane of the gums, cheeks, tongue, and tonsils are characteristic of the disease.

The milder or more common form is slower in its progress and remains on the surface, not affecting the membrane deeply. Stagnant, foul mucus or serum seems to be necessary to its successful development. Undoubtedly the true type is more often found in unclean mouths where decayed teeth are present, around spaces where faulty fillings, overhanging gum margins are a source of irritation as well as uncleanliness, or where the soft tissues of the mouth have already received injury from diseases such as pyorrhea, salivation, or other diseases.

The infection is carried and spread from an infected individual to a well one by direct contact. Eating utensils not properly cleaned, face towels, drinking cups, personal articles, kissing, and living in crowded buildings without plenty of fresh air and sunshine are some of the causes of the spread of this disease. The exact mode of transmission has not been entirely agreed upon by all authorities. An unsuspecting person may be a carrier and transmit the organism, harmless to himself but harmful to others.

To prevent the likelihood of infection with this disease everyone should keep his mouth in a clean, healthy condition. When teeth first begin to decay, they should receive immediate attention, and the small cavities should be filled without delay. No decayed teeth or broken-down roots should be allowed to remain in the mouth. The mouth should be thorourghly cleaned by the use of a toothbrush and dental paste or powder, or even soap or salt and water, after each meal, if possible; but in any case always before retiring for the night, and the first thing on arising in the morning. The gums should be properly massaged with the toothbrush or the fingers, and the roof of the mouth and the tongue should be softly brushed also. Although it might be possible for a clean mouth to become infected, the chances are greatly in favor of a person with such a mouth, for a clean mouth with healthy vigorous gums and mucous membrane will resist infection. The throat is extremely difficult to cleanse properly, but always before retiring a gargle of salt water or any mild antiseptic should be used.

The true diagnosis of Vincent's infection can be made only in a medical or dental laboratory with the use of the microscope. Whenever the uncomfortable symptoms of a persistent sore mouth are experienced, that person should immediately consult his dentist or his physician for treatment. Vincent's infection cannot be treated at home with household remedies. In the first place, it could not be properly diagnosed, and the danger of its becoming acute, with serious after-results, would be great.

In case a dentist or a physician is not available, the treatment should be the use of a mouth wash at frequent intervals until skilled treatment can be obtained. Undoubtedly the micro-organism causing this disease cannot live or keep its virulent nature in the presence of

air or free oxygen. Although it might continue to exist for some time in the presence of oxygen, it will not multiply. It is evident, then, that any oxygen-liberating compound will check the growth of these organisms. For this purpose there are three outstanding drugs which may be used as an efficient mouth wash. They are hydrogen peroxide, potassium permanganate, and sodium perborate. All of these drugs, when freshly prepared, liberate oxygen.

Hydrogen peroxide is a solution easily obtained and is capable of liberating ten volumes of oxygen. When used as a mouth wash, diluted with equal volumes of water and used at frequent intervals, forcibly working it back and forth in the mouth by contraction of the lips and cheek muscles, it will serve very well as a temporary measure.

Potassium permanganate in 1:5,000 dilution is good, although it has a disagreeable taste. Sodium perborate is a white powder readily soluble in water, and when freshly dissolved liberates about 9 per cent oxygen. It is a good home remdy, but will not keep in solution and will lose strength in solid form if kept in a warm place.

Any of these remedies will serve as a temporary expedient for a few days until the services of a dentist can be secured; but it is dangerous to delay treatment if it can be possibly obtained.

During the acute stage the toothbrush should not be used, as it is likely to cause a hemorrhage by forcibly removing the diseased membrane. This would furnish more pabulum for bacterial growth.

Although the outlook in Vincent's infection is favorable and the condition usually responds quickly to competent treatment, neglect may result seriously, as the micro-organisms causing this disease have been isolated from other more serious diseases such as meningitis, peritonitis, and diabetes. Most cases of Vincent's infection can be cured with proper treatment.

—(*Bulletin, U. S. Public Health Service*).

Roentgenology

Roentgen-Ray Diagnosis.

LEOPOLD JACHES, M. D., Radiologist, Mt. Sinai Hospital, New York City.

(*Continued from page* 494)

Tuberculosis.—The various changes occurring in the progress of pulmonary tuberculosis are strikingly depicted on the roentgenograms. The early lesions are generally well circumscribed areas of fair density and are made up of nodules and an exudate surrounding them. In healing, the exudate will be absorbed and only very small, dense shadows of the nodules will remain. If the disease progresses these areas become larger, more irregular in outline and denser. In advanced cases both upper lobes and even both lungs may become involved. Frequently the trachea is displaced to the side first affected. There may be a combination of the denser, older lesions and of the fainter more recent invasion. If caseation occurs, the shadows are very dense and irregular in outline. Cavity formation will often occur. In the earlier stages the wall of the cavity may be very thin; later, increasing infiltration around it will be seen as a thick wall and may even hide the cavity almost completely. Frequently more than one cavity will be seen. The walls between them may break down and one very large cavity may result. Occasionally a fluid level can be recognized. If it is large enough to be seen on the fluoroscope, the fascinating spectacle of a shifting fluid level can be had. Small cavities have sometimes disappeared. This has given rise to the contention that they are not cavities in the lungs but merely localized areas of pneumothorax.

If the moderately advanced lesion heals, the infiltration becomes well circumscribed and dense fibrotic bands or calcified areas will be seen.

Tuberculosis of the miliary type presents a striking picture. Both lungs are dotted throughout with very small, fairly dense circular shadows. Occasionally the lung only, and no other part of the body, is affected. This type usually heals and is not so fatal as the generalized acute miliary tuberculosis.

The lesions as a rule involve first the upper lobes. Except in children, hilum tuberculosis is rare; so is tuberculosis limited to the lower lobes. This atypical form may occur in cases of diabetes mellitus or with deformity of the chest, such as kyphoscoliosis.

A word of warning: activity cannot be diagnosed from a roentgenogram.

Pneumonia.—Lobar pneumonia appears as a homogeneous shadow of lobar distribution. It may involve part or all of a lobe or even

more than one. In the stage of consolidation or hepatization, the shadow is very dense and lung markings can hardly be distinguished; in the stage of resolution, the density is less uniform and lung markings begin to show. The value of the roentgen-ray lies not so much in the diagnosis of the presence of the disease as in the determination of the stage of the disease, the progress of resolution, the presence of pleural effusions, or the development of gangrene or abscess. The rays also aid in the more exact localization of the disease.

Massive collapse, which occurs after trauma or surgical procedures, causes practically the same density of a lobe or of the entire side of the chest as that seen in lobar pneumonia. It may be distinguished from the latter by the displacement of the heart and mediastinum to the affected side and by the comparatively larger size of the normal side.

Bronchopneumonia presents irregular patches of infiltration scattered throughout both lungs. They may become confluent, and when limited to the area of a lobe may be easily mistaken for lobar pneumonia. If the infiltrations are discrete they may simulate tuberculosis. In that event the true nature of the disease may not be recognized until the lungs become clear.

Abscess.—Abscess and gangrene of the lung may be the result of aspiration of foreign bodies or infectious material, or may follow pneumonia. The former is more frequent in the upper lobes, especially the right, the latter at the bases. If an incompletely filled cavity is present, this condition is easily recognized. If fluid in the cavity completely fills it and there is marked inflammatory infiltration around it, it may be indistinguishable from pneumonia. Here, again, the history will help make the diagnosis.

The process may heal spontaneously in approximately 30 per cent of the cases. Depending on the extent of the lesion, the lung may return to almost normal or marked fibrosis may result.

Bronchiectases.—These resemble a honeycomb in appearance. When all the cavities are filled, this characteristic observation may be absent, and the lesion in the lung resemble that of lobar pneumonia, or small patches of bronchopneumonia.

Iodized oil, injected intratracheally, aids in the localization of abscesses and bronchiectases and shows the size and number of cavities.

Syphilis.—Syphilis of the lung is occasionally encountered. It has no characteristic lesion. It may involve the region of the hilum or any other part. This diagnosis should be made only by the history, a positive Wassermann reaction and the result of antisyphilitic treatment.

Emphysema.—In emphysema there is generally a greater transparency of the lungs and an increased width of the intercostal spaces, and the difference in transparency between inspiration and expiration is very slight. In unilateral obstructive emphysema in children due to the aspiration of radiotransparent foreign bodies, there is a depression of the diaphragm on the affected side and displacement of the heart to the opposite side. It is best studied fluoroscopically because it is most evident at expiration.

(*To be continued*)

Prevention-of-Blindness Work in New York.

A prevention-of-blindness department has been opened in New York City by the New York State Commission for the Blind, with three full-time nurses and a consulting committee of eye specialists. All cases of eye difficulties brought to the attention of the department will be followed up for treatment.

St. Louis Cares for Its Children's Teeth.

Ten new dental clinics for the children of St. Louis have been provided for by the board of aldermen, which has appropriated $35,000 for the purpose. A dentist will be employed at each clinic for four hours a day. In addition, a supervisor's office and an extracting clinic will be opened in the municipal court's building. The Red Cross is cooperating by donating the equipment for eight of the clinics.

Supplying Human Milk for Babies.

Babies deprived of their mother's milk, for whom the services of a wet nurse are not practicable, are now being supplied by the Boston Wet Nurse Directory with human milk, obtained from mothers through carefully regulated methods. The demand for this "mothers' milk" is rapidly increasing, and the supply for 1927—almost 174,000 ounces—was nearly twice the amount collected in 1926. Many babies are said to owe their health, if not their lives, to the efficiency of this service.

PROCEEDINGS
Medical Society of Virginia

MINUTES OF THE FIFTY-NINTH ANNUAL MEETING OF THE MEDICAL SOCIETY OF VIRGINIA.

Danville, Virginia, October 16, 17 and 18, 1928.

GENERAL SESSIONS
Tuesday, October 16, 1928
8:00 P. M.

The Medical Society of Virginia met in the Capitol Theater and was called to order by Dr. I. C. Harrison, of Danville, Chairman of the Committee on Arrangements.

The invocation was said by the Reverend James M. Shelburne, pastor of the First Baptist Church, Danville.

Dr. Harrison introduced the Honorable Harry Wooding, Mayor of Danville, who welcomed the Society in behalf of the city and the medical profession of Danville.

After announcements in regard to coming meetings and other features of the program, Dr. Harrison introduced the President, Dr. J. W. Preston, of Roanoke. Dr. Preston then read his President's address, entitled "The New Day in Medicine."

At the request of the President, Dr. J. A. White, Richmond, chairman of the Membership Committee, with a few appropriate preliminary remarks, read the names of members who had died during the year, and the audience then stood with bowed heads for a moment in memory of those departed.

List of Twenty-eight Members of the Society Whose Deaths Have Been Reported Since the 1927 Meeting

Dr. Robert Glasgow, Lexington, Va., November 19, 1927.

Dr. Presley W. Morehead, Clarendon, Va., November 29, 1927.

Dr. John William Waldron, Grundy, Va., October 23, 1927.

Dr. Morton Eldridge Hundley, Martinsville, Va., January 2, 1928.

Dr. Eppa Hunton Heaton, Leesburg, Va., September 16, 1927.

Dr. Israel Brown, Norfolk, Va., February 11, 1928.

Dr. Robert Carter Randolph, Boyce, Va., February 20, 1928.

Dr Arthur Lewis Martin, Naulakla, Va., March 10, 1928.

Dr. William D. Meeks, Massies Mill, Va., March 25, 1928.

Dr. Joseph Henry Parker, Dendron, Va., March 29, 1928.

Dr. William Patterson Isley, Hampton, Va., April 22, 1928.

Dr. Thomas Edward Peery, Bluefield, W. Va., March 26, 1928.

Dr. Frank Mason Dillard, Alexandria, Va., May 18, 1928.

Dr. Edward E. Feild, Norfolk, Va., May 29, 1928.

Dr. J. H. M. Sykes, Boykins, Va., date not learned.

Dr. John R. Wheat, Richmond and Cumberland, Va., June 4, 1928.

Dr. Paulus A. Irving, Farmville, Va., June 11, 1928.

Dr. Henry Clay Carson, Osaka, Va., June 18, 1928.

Dr. Edgar B. Smoke, Frederick County, Va., June 10, 1928.

Dr. Clarence C. Jones, Staunton, Va., July 10, 1928.

Dr. Louis Leake Putney, Staunton, Va., July 26, 1928.

Dr. Hunter McGuire Brumback, Boyce, Va., July 27, 1928.

Dr. Julian R. Beckwith, Petersburg, Va., July 28, 1928.

Dr. William David Woolwine, Pearisburg, Va., July 27, 1928.

Dr. Alexander Russell Gray, Nokesville, Va., August 30, 1928.

Dr. Robert Patrick Carr, Norton, Va., September 21, 1928.

Dr. George Douglas Meriwether, Buena Vista, Va., October 7, 1928.

Dr. Edward Govan Hill, Richmond, Va., October 12, 1928.

The President introduced Dr. Dean Lewis (invited guest), of Baltimore, Md., who read a paper entitled "The Workings of the Medical Mind," illustrated with lantern slides.

The President introduced Dr. Seale Harris (invited guest), of Birmingham, Ala. Dr. Harris read a paper on "The Business of Keeping Well."

The program having been completed, the meeting adjourned.

Wednesday, October 17
10:00 A. M.

The Society met in the auditorium of the Elks' Home, with Dr. J. Bolling Jones, of Petersburg, President-elect, in the chair.

The following papers, comprising a symposium on "The Anemias," were read:

"Physiology of the Anemias, Normal and Pathologic"—Regena Beck, M. D., Richmond.

"The Symptomatology and Diagnosis of the Anemias"—Collins D. Nofsinger, M. D., Roanoke.

"Medical Treatment of the Anemias"—J. C. Flippin, M. D., University.

"Surgery of the Anemias"—R. L. Payne, M. D., Norfolk.

The papers in the above symposium were discussed by Drs. F. C. Rinker, Norfolk; Seale Harris, Birmingham, Ala.; W. Lowndes Peple, Richmond; Wm. H. Higgins, Richmond; J. Powell Williams, Richmond; Beverley R. Tucker, Richmond; R. Finley Gayle, Richmond; T. Dewey Davis, Richmond, and in closing by Dr. Flippin.

On motion of Dr. J. Shelton Horsley, Richmond, the privileges of the floor were extended to Dr. Paul Colonna, New York.

Dr. A. L. Tynes, Staunton, read a paper entitled "Agranulocytic Angina, with Report of a Case," which was discussed by Drs. Alex. F. Robertson, Jr., Staunton, and R. L. Payne, Norfolk; and in closing, by Dr. Tynes.

Dr. J. Powell Williams, Richmond, read a paper on "Liver Extract in the Treatment of Sprue, with

Report of Case," which was discussed by Dr. William B. Porter, Richmond.

Dr. Greer Baughman, Richmond, read a paper entitled "The High Obstetrical Death Rate, with Suggestions as to Its Cure." This was discussed by Drs. P. W. Miles, Danville; Robert P. Kelly, Lynchburg; Percy Harris, Scottsville, and by Dr. Baughman in closing.

The chairman read the following telegram, received from the Southern Medical Association:

"Birmingham, Ala., Oct. 17, 1928.

Medical Society of Virginia,

In Annual Meeting Assembled, Danville, Va.

Greetings:

We hope you are having great meeting. Southern Medical Association meets next month, Asheville, North Carolina, which is accessible to members Virginia State Medical Association. It is hoped that a large number will avail themselves of the privilege of attending. A most cordial invitation is extended to all.

Southern Medical Association."

A paper entitled "The Recognition and Prognosis of the Various Types of Heart Block," by Dr. J. E. Wood, Jr., and Robert King, of University, was read by Dr. Wood and was discussed by Drs. Wm. B. Porter, Richmond; T. H. Daniel, Charlottesville; C. B. Bowyer, Stonega, and by Dr. Wood in closing.

The morning session then adjourned.

Afternoon Session

The Society met at 2:45 P. M. in the auditorium of the Elks' Home, with the President, Dr. J. W. Preston, presiding.

Dr. Charles Phillips, Professor of Pathology, Medical College of Virginia, Richmond, read a paper entitled "Some Pathological Observations on the Incidence of Tuberculosis and of Cancer in Five Hundred Autopsies."

Dr. Percy Harris, Scottsville, read a paper entitled "Preservation of the General Practitioner." This was discussed by Drs. Southgate Leigh, Norfolk; Roy K. Flannagan, State Department of Health, Richmond; by Dr. Harris and Dr. Flannagan again; Dr. W. C. Harman, Dolphin, and in closing by Dr. Harris.

A paper on "Correlation of Clinical and X-ray Data in Diagnosis of Tuberculosis of Childhood," illustrated with lantern slides, was read by Dr. Samuel Newman, of Danville, and was discussed by Drs. L. J. Whitehead, Richmond; J. A. Hawkins, Danville; Dean B. Cole, Richmond; A. L. Gray, Richmond, and Wm. B. McIlwaine, Petersburg; and by Dr. Newman in closing.

Dr. William B. McIlwaine, Petersburg, read a paper entitled "Some Impressions on Gastro-intestinal Diseases in Infants and Young Children," which was discussed by Drs. Basil B. Jones, Richmond; Wilburt C. Davison, Dean of the Medical School of Duke University, Durham, N. C., and F. D. Wilson, Norfolk.

A paper on "Health Habits in Young Children," was read by Dr. James B. Stone, Richmond, and was discussed by Drs. Chas. E. Conrad, Harrisonburg; F. D. Wilson, Norfolk; Basil B. Jones, Richmond, and Wm. B. McIlwaine, Petersburg.

A paper by Dr. W. W. Waddell and Dr. R. L. King, of the University of Virginia, entitled "The Care and Feeding of Premature Infants," was read by Dr. Waddell and was discussed by Drs. F. D. Wilson, Norfolk; Greer Baughman, Richmond, and Lawrence T. Royster, University.

Dr. Littleton Davis, Roanoke, read a paper entitled "Non-draining Purulent Otitis a Source of Danger to the Heart in Children," which was discussed by Dr. H. S. Hedges, of Charlottesville, and by Dr. Davis in closing.

Dr. W. P. Jackson, Roanoke, read a paper on "Nutrition and Health Among School Children."

The Society then adjourned.

Evening Session

The Society met in the Capitol Theater at 8:00 P. M., with the President, Dr. Preston, presiding.

Dr. Roy K. Flannagan, Richmond, read a paper on "Hippocrates: The Modern Physician."

Dr. Southgate Leigh, Norfolk, read a paper entitled "Marion Sims."

Dr. Morris Fishbein (invited guest), Editor of the *Journal of the American Medical Association*, Chicago, addressed the Society on the subject of "Quacks and Quackery."

After this program, the meeting adjourned for the reception and dance at the Golf Club, tendered to the members and guests of the Society.

Thursday, October 18
9:00 A. M.

The Society met in the auditorium of the Elks' Home with the President-elect, Dr. Jones, presiding.

Dr. Martin Lasersohn, Associate in Medicine, Medical College of Virginia, Richmond, read a paper on "The Cumulative Action of Insulin: The Prolonged Action of Insulin and Its Practical Application." This was discussed by Dr. T. Dewey Davis, Richmond, and by Dr. Lasersohn in closing.

A paper by Dr. Dean B. Cole and Dr. L. J. Whitehead, entitled "Bronchograms in the Study of Pulmonary Disease," was read by Dr. Cole and was discussed by Dr. Garnett Nelson, Richmond, and in closing by Dr. Cole.

Dr. William B. Porter, Richmond, read a paper on "The Diagnosis of Pericardial Effusions: A Preliminary Report," which was discussed by Drs. Martin Lasersohn, Richmond, and Dean B. Cole, Richmond.

Dr. Ira J. Haynes, New Hope, presented a paper entitled "Medical Economics."

Dr. R. L. Raiford, Franklin, read a paper entitled "It's Nothing but Nerves; Forget It."

A paper on "Abdominal Pain and Its Relation to Neurological Diseases" was read by Dr. Howard R. Masters, Richmond.

The following papers were read:

"Duodenal Ulcer," by Dr. E. Starr Judd (invited guest), of the Mayo Clinic, Rochester, Minn.

"Gastrectomy for Gastric Ulcer and Gastric Cancer"—Dr. J. M. Emmett, Clifton Forge.

"Unusual Duodenal Conditions as Demonstrated by X-ray"—Drs. V. W. Archer and C. H. Peterson, University. (Read by Dr. Archer).

These papers were discussed by Dr. J. W. Preston, President; Drs. A. L. Gray, Richmond; Stuart McGuire, Richmond; J. Shelton Horsley, Richmond, and Hugh Trout, Roanoke, and in closing by Dr. Judd and Dr. Archer.

A paper entitled "Tularemia in Virginia," by Dr. Staige D. Blackford and Dr. W. E. Bray, of the Department of Internal Medicine and the Clinical Laboratory, University of Virginia Hospital, was read by Dr. Blackford. This was discussed by Drs. W. A. Brumfield, Farmville, and G. Foard McGinnes, Richmond.

Dr. Thomas J. Tudor, Norton, read a paper on

"Typhoid Fever: Prophylaxis and Dietetic Treatment."

A paper on "Tuberculosis of the Thyroid," by Dr. S. W. Budd and Dr. Carrington Williams, Richmond, was presented by Dr. Budd.

The morning session then adjourned.

Afternoon Session

The Society met in the auditorium of the Elks' Home at 2:45 P. M., with the President, Dr. Preston, in the chair.

Dr. E. G. Gill, Roanoke, presented a paper on "Diseased Conditions of the Air and Food Passages," illustrated by lantern slides, which was discussed by Dr. E. U. Wallerstein, Richmond.

Dr. Blanton P. Seward, Roanoke, read a paper on "The Rational Use of Digitalis," which was discussed by Dr. Garnett Nelson, Richmond.

Dr. Richard H. Meade, Jr., University, read a paper entitled "The Reaction of the Negro to Bilateral Oophorectomy."

Dr. W. L. Powell, Roanoke, read a paper on "Fractures and Their Treatment," illustrated by lantern slides.

The hour having arrived for the report of the House of Delegates, which was set as a special order of business, the report was read by Miss Agnes V. Edwards,, Secretary-Treasurer.

The President stated that the new Constitution and By-Laws, which have been adopted by the House of Delegates, provide that the Society shall have three vice-presidents and also provide that the vice-presidents shall be elected by the House of Delegates. There not being a quorum of the House of Delegates present, the vice-presidents cannot be elected at this session.

Dr. Garnett Nelson, Richmond, read a paper on "The Management of the Essential Features of Impaired Kidney Function."

Dr. Lawrence T. Price, Richmond, read a paper entitled "Report of a Case of Bilateral Cystic Kidney Tumor," illustrated by lantern slides.

Dr. Austin I. Dodson, Richmond, read a paper entitled "Further Observations on Tumors of the Bladder," illustrated by lantern slides, which was discussed by Dr. C. P. Howze, Danville.

The paper of Dr. W. E. Fitch, Bedford Springs, Penna., entitled "The Value of Renal Tests in the Conservation of the Renal Function in Nephritis," was read by title.

Induction of New President

Dr. Preston, President: I wish to state that I have now personally ended a year of most happy associations and most interesting work. It has been a delight to me to try to do something for the good of the Medical Society of Virginia and for the individual members of the Society, for I have felt all along that I have had the heartiest support of the Society and of the members. I have not this year asked any member to be a member of a committee or what not that he has not responded sincerely, promptly, and efficiently. From the bottom of my heart I thank all of you.

It now becomes my duty to introduce to you Dr. Jones as the President of the Medical Society of Virginia—Dr. J. Bolling Jones, of Petersburg.

Dr. J. Bolling Jones, President: It is impossible for you gentlemen to know how deeply I feel assuming this responsibility. It has been my province to be a member of the Medical Society of Virginia for a great many years, and to attend its meetings from year to year has been one of the greatest pleasures in my life. No man could have had more courtesy extended to him than I have had in meeting face to face the members of this body, and I was overpowered a year ago to learn that I had been elected your president-elect for this last year, being the first president-elect of this body. This last year has been a delightful one to me; to be associated with such a man as Dr. Preston has been a privilege. I feel that I have gained so much from associations with him and his committees that I shall be able to make much progress during the coming year. Success cannot be attained in the Society except by cooperative action and team work on the part of the president and the members of the Society; and I am looking forward to your help, for in that way and that way alone can we accomplish the things I want to accomplish for the good of the Society.

As you know, the House of Delegates has made some changes in regard to the committees, having changed medical defense to medical economics and having also changed the membership of the standing committees from five to three. By constitutional provision it has been arranged that the members shall be appointed by your retiring president and myself, the members to be appointed for one, two, and three years, respectively. The incoming president each year will then appoint one member on each committee. I am very thankful that you provided that the members this year shall be appointed by Dr. Preston and myself jointly. I shall now read the names of the members of these committees:

Standing Committees Appointed by Dr. J. Bolling Jones, President

Figures after names indicate length of term of membership.

Scientific Work and Clinics: *Chairman*, Dr. John S. Horsley, Jr., (3), Dr. J. Edwin Wood (2), and Charles Phillips (1).

Public Policy and Public Health: *Chairman*, Dr. Lawrence T. Price (1), Dr. J. L. Hamner (2), and Dr. E. G. Williams (3).

Publication and Program: *Chairman*, Dr. Alexander G. Brown, Jr. (3), Dr. Alfred L. Gray (2), and Dr. John H. Neff (1).

Medical Economics: *Chairman*, Dr. John O. Boyd (3), Dr. Paul W. Howle (2), and Dr. Malcolm H. Harris (1).

Medical Education and Hospitals: *Chairman*, Dr. J. Allison Hodges (3), Dr. A. L. Tynes (2), and Dr. William H. Higgins (1).

Membership: *Chairman*, Dr. J. A. White (3), Dr. John A. Gibson (2), and Dr. Charles A. Easley (1).

Ethics and Judiciary: *Chairman*, Dr. Garnett Nelson (3), Dr. J. E. Rawls (2), and Dr. Joel Crawford (1).

Special Committees

Walter Reed Commission: Dr. E. C. S. Taliaferro, chairman, Drs. Clarence Porter Jones, Greer Baughman, H. S. Hedges and Garnett Nelson.

Maternal Welfare: Dr. Greer Baughman, chairman, Drs. Mary E. Brydon, L. A. Calkins, P. W. Miles and Ruth Mason.

To Investigate Problems Pertaining to Laboratory Technicians: Dr. Charles Phillips, chairman, Drs. J. D. Willis, R. D. Caldwell, Walter B. Martin and Mr. Aubrey H. Straus.

Memorial to Dr. Ephraim McDowell: Dr. E. P. Tompkins, chairman, Drs. O. H. McClung and M. T. Vaden.

Cancer Education: Dr. J. Shelton Horsley, chair-

man, Drs. Hugh Trout, S. W. Budd, Southgate Leigh and Stephen H. Watts.

LIBRARY: Dr. I. C. Harrison, chairman, Drs. Stuart McGuire and Charles R. Grandy.

HISTORY OF MEDICINE IN VIRGINIA: Dr. Wyndham B. Blanton, chairman, Drs. Beverley R. Tucker and F. C. Rinker.

POST-GRADUATE STUDY BY THE STATE SOCIETY: Dr. J. W. Preston, chairman, Drs. J. C. Flippin, Manfred Call and Ennion G. Williams.

CHILD WELFARE: Dr. M. L. Anderson, chairman, Drs. Percy Harris, W. P. Jackson, R. T. Hawks and J. H. Hiden.

Gentlemen, it now becomes my duty and great pleasure to introduce to you the gentleman whom the House of Delegates has elected as your President-elect to serve with me this next year. This gentleman I have been intimately associated with during the past year in working over the Constitution and By-Laws and also during the years I have been a member of the Society. It gives me great pleasure to present to you Dr. Charles R. Grandy, of Norfolk, as your President-elect.

DR. CHARLES R. GRANDY, President-elect: *Mr. President and Gentlemen:* I can assure you that this is the greatest gratification that has come to me since I have been a member of the Society. Like most members of the Society, I have looked forward to the bare possibility some time of holding the principal office. During the years I have been a member I have tried to serve the Society and have always had the interests of the Society at heart, and I am thankful that I shall have this chance to work for the Society and with you. The Medical Profession of Virginia, I consider, should be embodied in the Medical Society of Virginia, and I hope that soon the terms will really be synonymous, so that it can be able to serve all the individuals of the Profession.

DR. J. W. PRESTON: Mr. President, before we adjourn I should like that we offer a vote of thanks for the hospitality and the courtesy and the work of the committee of physicians from Danville, of the physicians and their families, of the citizens of Danville as a whole, the Danville press, the Danville hotels, and the trustees of the Elks' Home for the courtesies extended and the help they have given us.

This motion was seconded and carried.

The Society then adjourned *sine die.*

BUSINESS SESSIONS

The House of Delegates of the Medical Society of Virginia held its first meeting in the Danville Hotel, Danville, Va., October 16, 1928, at 2:30 P. M. The meeting was called to order by Dr. J. W. Preston, of Roanoke, President. Roll call showed a quorum present.

The Executive Secretary-Treasurer presented the two following reports:

Secretarial Report

To the President and Members of the House of Delegates:

At our 1927 meeting we reported a membership of		1,840
Since then we have enrolled new members	73	
Reinstated	1	
	74	
Lost by death	28	
Resigned	13	
Dropped for nonpayment or lost	27	
	68	6
Making a net gain of 6 members, or a total of		1,846

The Society has had an unusually active year, with meetings of the Executive Council and a number of Committees.

Dr. Israel Brown, Norfolk, Councilor from the Second Congressional District, died on February the 11th, and Dr. Walter B. Martin was appointed his successor.

Upon recommendation of the Executive Council, Governor Byrd appointed Dr. Alex. F. Robertson, Jr., Staunton, as a member of the Virginia State Board of Medical Examiners in the Tenth District, to fill the vacancy caused by the death of Dr. Robert Glasgow, of Lexington.

The Society has been called on during the year for medical defense in four cases, in addition to two cases brought over from last year. We have paid $800.00 this year for defense of three of these cases.

One hundred and fifty dollars of the appropriation on the Ephraim McDowell Memorial, in Rockbridge County, Va., has been turned over to the Committee.

In addition to the personnel of the committees announced in minutes of the Executive Council, the President appointed the following as members of a committee on the History of Medicine in Virginia: Dr. Wyndham B. Blanton, Richmond, Chairman; Dr. Beverley R. Tucker, Richmond, and Dr. Frederick C. Rinker, Norfolk.

Drs. Southgate Leigh, J. W. Preston, regularly appointed delegates, and Dr. E. G. Williams, alternate for Dr. Murat Willis, represented our Society at the Minneapolis meeting of the American Medical Association. In the re-apportionment of delegates by the American Medical Association, we are advised that we will still be entitled to three delegates in the House of Delegates of that organization.

During the year we have been notified of the reorganization of Fauquier County Medical Society, and of the organization of the Scott County Medical Society and the Dickenson-Buchanan County Medical Society, charters being issued the last two societies. The Medical Society of Northern Virginia also secured a charter from the State Society. This includes the counties of Clarke, Frederick, Page, Rappahannock, Shenandoah and Warren, all of which had previously been chartered; several of them, however, had become inactive and it was believed the larger organization might better hold the interest of its members. New Kent has been included in the Mid-Tidewater Medical Society, making a combination of eight counties in that society. The organization of Franklin County is now pending. At the present time we have a total of fifty-two societies, including eighty-three counties and one city, Alexandria, organized. We regret that some of these do not report any activity, but we still have hope.

In closing, we wish to thank all of our members and committees for the excellent cooperation given us this year. We hope this may continue and that our members may manifest an even greater interest in the Society during the coming year.

Financial Report for 1927

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS FOR THE VIRGINIA MEDICAL MONTHLY AND THE MEDICAL SOCIETY OF VIRGINIA., FOR THE YEAR ENDING DECEMBER 31, 1927.

RECEIPTS

Cash in checking acct. Jan. 1, 1927		$ 4,104.85
Invested at 6% interest		5,000.00
Virginia Medical Monthly		
Advertising	$6,928.29	
Subscription (non-members)	415.25	
Subscription ($2 a member)	3,400.50	
Interest	244.42	
Sundries	223.77	
		11,212.23
Medical Society of Virginia		
Dues (less amount for Journal and legal defense)	$3,400.50	
Legal defense ($1 a member)	1,703.00	
Interest	244.43	
Sundries	300.23	
		5,648.16
		$25,965.24

DISBURSEMENTS

Virginia Medical Monthly		
Preparation of Journal	$7,320.35	
Salaries	2,000.00	
Postage	290.50	
Rent, fuel, janitor and phone	289.99	
Sundries	124.65	
		$10,025.49
Medical Society of Virginia		
Salaries	$2,000.00	
Postage	243.13	
Rent, fuel, janitor and phone	291.10	
Legal Defense	400.00	
Mettauer Tomb	300.00	
Reporters at Petersburg meeting	176.04	
Programs	85.00	
Expenses, Councilors at Mid-winter meeting and committees	94.90	
Secretary's traveling expenses	54.22	
Sundries	445.80	
		4,090.19
Invested in real estate note at 6%		1,000.00
		$15,115.68
To balance in checking account		5,849.56
Amount invested at 6% interest		5,000.00
		$25,965.24

Available for legal defense, January 1, 1927		$ 6,490.14
Receipts in 1927	$ 1,703.00	
Disbursements in 1927	400.00	
		1,303.00
Available for legal defense, January 1, 1928		7,793.14
$6,000.00 of which is invested at 6%		
Available for operating expenses		4,056.42
Total		$11,849.56

AGNES V. EDWARDS,
Executive Secretary-Treasurer.

January 14, 1928.

This is to certify that we have examined the books and records of the Medical Society of Virginia, showing the cash receipts and disbursements of the Society from January 1, 1927, to December 31, 1927, inclusive, and find them to be correct, as shown in this statement, and that the cash balance in the First and Merchants National Bank, Richmond, Virginia, both at the beginning and end of this period of time, have been verified by statements from that bank.

The books and records in the business office of the Society are properly and efficiently kept in order, and the system now in use will answer all requirements and give such information as may be desired.

I. C. HARRISON,
M. T. MCCULLOCH,
Auditing Committee.

It was moved, seconded and carried that both of these reports be received and filed.

A financial statement was made as to receipts and disbursements during the first nine months of 1928 and it was moved, seconded and carried that this be received and filed for use of the Budget Committee in making its recommendations for the coming year.

At this point, Dr. J. W. Preston, President, stated that he had decided it might be better to make certain recommendations to the House of Delegates instead of embodying them in his address to be given to the public that evening, and, with the permission of the House, he presented the following report:

Report and Recommendations by the President.

In consideration of the fact that matters pertaining to the routine conduct of the Society can be of little interest to those of the public who may be in attendance upon the occasion of the opening exercises of the meeting, it has been deemed not inappropriate that a brief report dealing with such matters be made at this time to your body.

It is with pleasure that I am able to report that the various committees to which you have delegated specific work throughout the past year, have been active and have made real progress, as will be evidenced in their respective reports, and I wish here and now to express my sincere appreciation of the cooperation I have received in all matters undertaken, not only upon the part of the membership of the committee, but also upon the part of the membership of the Society as a whole.

As will be shown by the report of the Secretary,

the Council representing your body *ad interim*, was called together March 5, primarily for the purpose of passing upon the question as to whether or not in obedience to your instructions it were wise and proper to press the revision of the Practice Act at the session of the Legislature, then about to convene. The details of the meeting are set out in its minutes which will be read by your Secretary and in the report of the Public Policy and Public Health Committee.

In the above connection it seems proper to state that in the discussion incident to the meeting of the Council, two important matters developed. *First*, the apparent growing interest of the members of the Society in post-graduate work, which culminated in a motion, which carried, appointing a committee having to do directly with further investigation and development of the work. *Second*, instructions to your president that he appoint a committee charged with the duty of collecting data and writing a history of medicine in Virginia.

Relative to the matter of post-graduate work, I wish to state that the motion above referred to carried with it the appointment, as members of the committee, of the Dean of the Medical Department of the University, the President of the Medical College of Virginia, the Commissioner of Health of the State, and the President of the Medical Society. The details of the work of the Committee subsequent to its appointment will be reported to you by Dr. Flippin. I now wish to recommend that the committee be continued, with the in-coming President as chairman, and that, while its duties be limited to the development and administration of post-graduate medical work in the State, they be correlated with that of the committee upon Medical Education and Hospitals. I wish also to recommend that the committee be authorized if in its judgment it be wise, to continue clinics in connection with the annual meetings of the Society and that it be authorized to secure such clinicians as it may deem best suited, and that a sufficient fund be appropriated to pay the expenses of such clinicians, and other necessary expenses in connection with the development of the work.

Relative to the appointment of the History Committee, it is a pleasure to state that Drs. Wyndham Blanton, Beverley Tucker, and F. C. Rinker, have accepted the responsibility of this important work and are prepared to present to you an outline of what they deem to be the better plan of procedure. I wish to recommend that such appropriation be made from the general funds of the Society as may be necessary to obtain the assistance, upon a part time basis, of a competent research worker in connection with the collaboration of the work.

Touching the matter of law enforcement, while it is manifestly unjust that the burden of providing a fund for such purpose should rest upon the medical profession, the experience of those to whom law enforcement is delegated in the various states appears to be similar; that is to say, that it cannot be carried on successfully without an adequate fund. Therefore, since our statute does not provide a fund I would recommend that such appropriation be made from the general funds of the Society as can be afforded, and that it be disbursed by the President, under the direction of the Council, for such purpose as may be most needful.

I wish to recommend that, in connection with the duties of the Medical Defense Committee, the services of a competent legal adviser be retained, in accordance with the plan of the past year and that an appropriation be made for such purpose.

It has been suggested that the title of the Committee to INVESTIGATE TRAINING OF MIDWIVES IN VIRGINIA, be changed to that of "THE MATERNAL WELFARE COMMITTEE OF THE MEDICAL SOCIETY OF VIRGINIA." I wish to recommend this change.

A request has been made that a committee be appointed having to do with CHILD WELFARE in the State. It is manifest that no more important a matter could be brought to your attention, and I therefore recommend that it be given careful consideration.

It was moved and seconded that this report be received and filed. Carried.

Minutes of the Council meetings were next read.

Minutes of Council Meetings

MEETING OF JANUARY 14, 1928.

The Council of the Medical Society of Virginia held its mid-winter meeting in the Society's offices, in Richmond, January the 14th, 1928, at 4 P. M., the president, Dr. J. W. Preston, of Roanoke, presiding. Others in attendance were Dr. J. Bolling Jones, President-elect, Miss Agnes Edwards, secretary, and the following councilors: Dr. R. D. Bates, Dr. Israel Brown, Dr. Lawrence T. Price, Dr. I. C. Harrison, Dr. T. A. Kirk, Dr. Hunter H. McGuire, and Dr. M. T. McCulloch.

The president stated that he had appointed Drs. Harrison and McCulloch to audit books of the secretary-treasurer and asked for their report. Dr. Harrison stated that they had examined the books and found them correct and in order and that they showed a balance on December 31, 1927, of $11,849.56, of which $6,000.00 is invested at 6 per cent. He further stated that of the total amount, $7,793.14 is available for legal defense of members, and $4,056.42 for operating expenses. It was moved by Dr. Price, duly seconded, that the report of the Auditing Committee be received and approved.

Reports from the various committees were next called, many reporting activity.

Dr. Price, chairman of the Public Policy and Public Health Committee, asked for a ratification by the Council of the resolutions adopted by his committee at its meeting just before the Council meeting, which was attended by several of the councilors. Dr. McGuire moved, seconded by Dr. Harrison, that the Council approve the policy adopted by this committee regarding the chiropractor bill and other legislation. Carried.

After discussing legislative matters to be brought before the General Assembly this year, Dr. Brown moved, seconded by Dr. Harrison, that the Society make an appropriation not exceeding $500.00 for the use of the Public Policy and Public Health Committee in its legislative work this year. Carried.

Dr. Price, chairman of the Committee on Medical Defense and Medical Economics, stated that in accordance with the By-Laws, his committee was not empowered to give assistance except as cases could be acted upon by the Council or the House of Delegates, which might necessitate delay in assisting our members unless one of these bodies were in session when help was needed. He also suggested an annual retaining fee for an attorney who might give legal advice about all cases applying for medical defense. A discussion of the duties of this committee resulted in adoption of the three following resolutions:

Moved by Dr. Brown and seconded that the president appoint a committee from the Council to draw up regulations and recommendations for this committee in the conduct of its work. Carried.

It was moved by Dr. Harrison, seconded by Dr. Bates, that the Society appropriate $200.00 for the services of an attorney for advice in medical defense cases during 1928. Carried.

Dr. Price moved, seconded by Dr. McGuire, that the treasurer be authorized to pay bills for medical defense of our members upon the approval of the chairman of the Medical Defense Committee and the President of the Society. Carried.

Dr. Preston then appointed Dr. J. Bolling Jones, Dr. Price and Dr. Bates as the committee from the Council to draw up regulations and recommendations for the Medical Defense Committee in the conduct of its work.

A letter was read from Dr. E. P. Tompkins, chairman of the Committee on the Memorial to Dr. Ephraim McDowell, stating that the Committee had not received some local financial assistance they had expected for this memorial and asking that the Society increase its appropriation of $150.00 for this work to $300.00. It was moved by Dr. Brown and seconded by Dr. Price that the appropriation for the Ephraim McDowell memorial be increased from $150.00 to $300.00. Carried.

It was announced that Dr. Greer Baughman, chairman of the Committee to Investigate the Training of Midwives in Virginia, had reported that some financial assistance would be needed to put over the program his committee had in view. After hearing from Dr. Bolling Jones, member of the committee, of the need of the work contemplated, Dr. McCulloch offered a motion, seconded by Dr. Brown, that an amount not to exceed $100.00 be appropriated by the Society for the work of this committee. Carried.

The secretary called attention to the By-Law whereby members deserving it might be exempted from the payment of annual dues by the Council and asked if the various district councilors might not be in better position to pass on such cases, following which Dr. Harrison offered a motion which was duly seconded that each district councilor should pass on cases in his district upon request from the secretary. Carried.

It was moved and seconded that the House of Delegates hold its first regular meeting during the 1928 session at 2 P. M., Tuesday, October 16th, in Danville, at place to be indicated later. Carried.

It was moved and seconded that the 1927 Library Committee of the Society be continued, with a view to making some arrangements for a permanent library for the Society. Carried. This committee is composed of Dr. I. C. Harrison, chairman, and Drs. Stuart McGuire and Charles R. Grandy.

As a means of collecting and preserving the medical history of the State, it was moved by Dr. Harrison and duly seconded that the president appoint a committee of three as a committee on the History of Medicine in Virginia. Carried.

It was announced by the president that there was a vacancy on the State Board of Medical Examiners, caused by the death of Dr. Robert Glasgow and that the Council should nominate to the Governor some one to fill this vacancy. It was moved by Dr. McGuire and seconded by Dr. McCulloch, that Dr. Alexander F. Robertson, Jr., Staunton, be nominated to the Governor to fill Dr. Glasgow's unexpired term. Carried.

Upon motion, recess was taken for supper.

Following supper, Dr. Preston stated that he had given a great deal of thought to trying to put over some plan for post-graduate work in Virginia and that Dr. Horsley, in his presidential address in Petersburg, had also advocated such work. He said that the University of Virginia inaugurated a short post-graduate course at that institution last summer and that the Medical College of Virginia planned to put on a course in 1928. Dr. Horsley, who had been invited to this meeting, told how these courses were operated in some of the states which he had visited and also how they were being conducted by some of the other societies After a full discussion, Dr. Brown offered a motion, seconded by Drs. McCulloch and Price, that post-graduate courses with clinical material be undertaken in Virginia by the Medical Society of Virginia, the actual expense incurred to be borne by the Society, and that the plan shall be worked out by the President of the Society, Dr. Flippin, of the University of Virginia; Dr. Sanger, of the Medical College of Virginia, and Dr. E. G. Williams, State Health Commissioner. Carried.

County society organization was discussed and the councilors were urged to do everything possible, with the cooperation of the secretary, to secure 100 per cent organization of our counties.

It was moved by Dr. Price and duly seconded that actual expenses be paid members of the Public Policy Committee incident to their attendance upon the meeting of his committee that afternoon. Carried. It was stated that the By-Laws provided for payment of actual expenses of councilors in attending the mid-winter meetings of the Council.

Incident to the discussion of industrial insurance, Dr. Brown made a motion, which was seconded, that we recommend to all insurance companies that the periodic examinations required be made by the family physicians. Carried.

There being no further business, the Council adjourned.

MEETING OF MARCH 5, 1928.

The Council of the Medical Society of Virginia held a meeting on March the 5th, 1928, upon call of the president, Dr. J. W. Preston, in the offices of Dr. L. T. Price, Richmond.

Present: Dr. J. W. Preston, Roanoke, presiding; Dr. T. A. Kirk, Roanoke; Dr. I. C. Harrison, Danville; Dr. R. D. Bates, Newtown; Dr. L. T. Price, Richmond, and Dr. M. T. McCulloch, Troutville, of the Council, and Drs. E. C. S. Taliaferro, N. G. Wilson, and P. St. L. Moncure, of Norfolk; Dr. H. U. Stephenson, Richmond; Dr. J. M. Emmett, Clifton Forge; Dr. E. H. Shackleford, Richmond (osteopathic member of the State Board of Medical Examiners); Mr. R. H. Talley, Richmond, attorney for the Society, and Miss Edwards, secretary.

Upon request of Dr. Preston, Dr. Price, chairman of the Public Policy Committee, made a statement as to what had been accomplished by his committee in regard to medical bills before the General Assembly of Virginia, then in session. He said that the bill claiming special attention was the one known as House Bill No. 199, for the Amendment and Reenactment of the Medical Practice Act of Virginia. This, he said, had been passed out of the House of Delegates successfully and, after being acted on by the Senate Committee, had come up for its second reading on the floor of the Senate. When this had been passed up for its third reading on Saturday, the 3rd, Senator Jeffress had asked that it be reconsidered, which resulted in its being returned to the committee for consideration. He stated that

he had information to the effect that certain amendments to the Bill, as passed by the House of Delegates, would probably be proposed in the Senate, which if not accepted might result in an indefinite postponement of the Bill and that while he personally felt that we should work for the passage of this Bill without further amendment, regardless of the outcome, he desired to know the wishes of the members of the Executive Council and others before taking a final stand.

Dr. Preston then asked each doctor present, by name, to express his opinion as to what was best to be done. All the doctors approved the bill just as it was and thought that, in view of action taken about this by our House of Delegates, at our meeting last October, the Council had no authority to make any changes in the bill as it was presented at our Petersburg meeting.

Following a free discussion of the question, Dr. Harrison made a motion, seconded by Dr. McCulloch, that the Council expresses its confidence in the judgment of the Public Policy Committee and approves the Medical Practice Act Bill as it was passed by the House of Delegates of the Medical Society of Virginia, without any amendments. Carried.

Dr. Price said that he hoped the doctors would not feel that he had acted hastily in asking the president to call this meeting, but that he felt it necessary to have the backing of the Executive Council in working for the passage of this bill.

Dr. Preston said that he felt he could speak for all the doctors in attendance, as well as for himself, in saying that they did not feel that the meeting was unnecessary, however sanguine they may be, and that they wished to commend Dr. Price and his committee for their activity and to thank them. Most of the doctors present agreed to attend the Senate Committee on General Laws, that afternoon, at which time our bill would again come up for consideration.

There being no further business, the meeting adjourned *sine die.*

MEETING OF OCTOBER 16, 1928.

The Council of the Medical Society of Virginia held its meeting in the Danville Hotel, Danville, Va., October 16, 1928, at 11 A. M.

The meeting was called to order by Dr. J. W. Preston, President. Other members present were: Dr. J. Bolling Jones, President-elect; Dr. R. D. Bates, Dr. E. C. S. Taliaferro, alternate for Dr. W. B. Martin; Dr. L. T. Price, Dr. E. L. Kendig, alternate for Dr. W. D. Kendig; Dr. I. C. Harrison, Dr. T. A. Kirk, Dr. C. B. Bowyer, Dr. M. T. McCulloch, and Miss Edwards, secretary.

The minutes of the meetings of the Council of January 14th and March 5th were read and approved.

The financial report was next presented and it was ordered that this be received and filed.

The chairman then asked each councilor for a report on county organization work in his district.

Concerning the budget for the ensuing year, motion was made by Dr. Kendig, duly seconded, that a committee of three be appointed to get together and, in conjunction with Miss Edwards, prepare a budget for the next fiscal year, this to be presented to the House of Delegates. Motion carried.

The following committee was appointed: Dr. E. L. Kendig, chairman, Dr. L. T. Price and Dr. C. B. Bowyer.

Dr. Harrison made a motion, which was seconded, that the committee include in its recommendations an appropriation not exceeding $500.00 in addition to the salary budget, that Miss Edwards might secure a full-time office assistant. Carried.

Dr. Harrison made a motion that Franklin County be granted a charter, should they so desire. The motion was seconded by Dr. T. A. Kirk, and carried.

There being no further business, the meeting adjourned.

Motion was made that these reports be approved.

It being decided that a nominating committee should be appointed to make nominations for the various officers, motion was made by Dr. Moncure and seconded that delegates from the various districts get together immediately after this meeting and make nominations for the membership of this committee. Carried.

Dr. Morris Fishbein, editor of the Journal of the American Medical Association, by invitation, next addressed the House and gave a concise but most interesting account of the Democratic organization of the American Medical Association.

Dr. Southgate Leigh, senior delegate, gave the following report of the delegates to the Minneapolis meeting of the American Medical Association:

Report of Delegates to the American Medical Association

The American Medical Association is one of the most democratic, productive, and influential organizations of the entire world.

It is the earnest wish of your delegates that the doctors of Virginia shall become more familiar with its workings, and each one consider himself an integral part of the organization.

We would like again to say that its management rests with the various component State Societies, through their delegates. There is no "ring" or clique in control of its affairs. With the exception of a few selections by the president, all appointments are made by the House of Delegates. The trustees, appointed by the House, are in charge of its affairs between the meetings of the Association, and make a full and detailed report of their work for the approval or disapproval of the House. Its financial affairs are conducted in a remarkably efficient manner. It seems marvelous that it should receive a gross income of nearly $600,000.00 annually, without expense to the membership, and that its reserve fund should amount to nearly a million dollars.

Your delegates cannot speak too highly of the efficient services of the general manager, the editor and the various employees of the organization.

We shall call to your attention briefly some of the more important matters which came before the House of Delegates.

President Jackson called attention to the abuse of charity work in the following words:

"Now there is not a single hospital or clinic of any description offering free services that could continue for a month without the free and generous service of some doctor or staff of doctors. And for a true and pure charity there will always be found plenty and the best in the profession, ready and willing to serve at all times, day and night; in cold or in warm; in storm or in sunshine. The grocer does not give his produce or, as a rule, reduce his price. The plumber does not install the pipe for generous pleasure. The milkman is quite careful of his measure. Have we not a right, therefore, to insist that our free service be limited to those truly worthy of charity? In a large metropolitan city, an

outstanding surgeon in a magnificently built and equipped hospital, received remuneration for only eight out of one hundred patients operated upon. In another institution, patients have been received who were not only able but anxious to pay a surgical fee; but the patient was a charity case as far as the hospital was concerned and the surgeon was not allowed to accept even a comparative "tip" of compensation.

"Such practices are a most flagrant injustice to the men who serve the institution. Where, as is sometimes the case, these attendants are salaried professors, the custom is more unfair to the worthy and honorable physician on the outside who might otherwise have had a small stipend added to his meagre income.

"I feel that the time has come when (1) no institution or clinic should permit its attending physicians to be imposed on, and (2) when, whatever the social or other advantage to the physician in the clinic, he should not be permitted to contribute to what is a gross injustice to the profession as a whole."

From President-elect Thayer's address before the House, we would quote the following:

"My experience during the past year, in attending the meetings of the Board of Trustees and other councils, committees and conferences, has given me a more intimate acquaintance than had been mine before with the personnel and machinery of the American Medical Association, and I should like to say here, as I shall later in my more formal remarks, how sincerely I have been impressed by the character of the occupants of the executive offices of the Association and by the spirit which animates them. More than ever do I feel how important it is that the rank and file of the medical profession of America should appreciate the duty of devotion and loyalty to this mother organization.

"There have arisen in recent years many sectional and local societies and clubs, as well as several organizations, the meetings of which consist largely of lectures or demonstrations by invited guests from all over the world. Such gatherings have been instructive and very popular. These various special and general medical societies have become numerous, so numerous, that for one who, like the speaker, belongs to a number, it is quite impossible to attend but a small proportion of the meetings. None of these organizations in any sense takes the place of this Association to which the physician owes his primary loyalty, without which medicine in America would be chaotic. At these annual scientific gatherings is reviewed most of the new work, most of the important progress of the year. He who attends them, and distributes his time as he should, familiarizes himself with the scientific exhibit and follows the record of proceedings in *The Journal*, will find himself well abreast of the progress of the day. Especially familiar with the programs of these meetings for more than twenty-five years I, for one, am proud of them. More than this, the opportunity to meet one's fellows from all over the country is invaluable.

"In the local and state branches of the Association it is possible always to arrange for more of those clinical lectures and demonstrations which have lately become so popular. If one can afford to give the time necessary to attend a variety of special society meetings, it may be much to his advantage, but I have always felt, and I feel today more strongly than ever, that whatever one's attachment may be to the special organizations or clubs to which he may belong, whatever benefit he may gain from them, this body is the most valuable, the most important of all; it is the organization to which he owes his first and undivided devotion. It is the organization through which he can help most effectively 'to promote the science and art of medicine and the betterment of public health,' those objects which are our common aim. Through loyalty to this Association, the physician can best do his duty to the public."

The Secretary's report showed the enrolled membership of the Association on April 1, 1928, was 96,444, as compared with 94,252 on the corresponding date in 1927, and with 93,882 on March 1, 1927, as reported to the House of Delegates at the Washington session.

The Fellowship roster on April 1, 1928, carried 67,487 names, 1,597 more than on April 1, 1927.

Virginia is reported as having twenty-five counties not organized.

This showing is not good as compared with our sister states.

Your delegates would urge that the number be cut down during the coming year.

As suggested in our previous report, a skeleton organization in each county would be most helpful, even if it met only once a year. It could aid greatly in health and legislative work, and could send more delegates to the State meeting.

The secretary also called attention to the multiplicity of medical organizations, and stated in part as follows:

"Over-organization of a profession into official and independent groups will surely lead to division of loyalty, dissipation of effort, wasteful expenditures, inefficiency and obstruction to scientific progress."

The report from "*Hygeia*" was most encouraging, as follows:

"It is gratifying to the Board of Trustees to report that the income from subscriptions and from advertising in '*Hygeia*' in 1927 exceeded the cost of publication by the sum of $13,929.65. In 1926 the deficit was a little more than $34,000.00. . . .

"The Woman's Auxiliary has been very helpful in extending the circulation of *Hygeia* in several states. The Board of Trustees makes grateful acknowledgment of the aid received from this source."

The Association is prepared to furnish the profession, at small cost, with a large variety of pamphlets on health matters, as well as blanks for periodical health examinations.

The Council on Physical Therapy has made numerous researches throughout the year, and is prepared to supply the profession with various important reprints on the subject, and especially regarding therapeutic lights.

The Council also advised the medical schools to give proper instruction in Physical Therapy.

In our last report we stated that the House of Delegates had unanimously passed a resolution urging Congress and the Prohibition Department to so change the law and regulations that physicians should not be hampered in the legitimate use of alcoholic liquors in medicine. The Standing Committee was instructed to see to the carrying out of the resolution. Up to this time the committee has been unsuccessful in its efforts. The nearest it could get to a solution of the difficulty was a tentative agreement to permit additional amounts to be prescribed, but the conditions attached were so burdensome that the committee could not accept them. For instance, it was suggested that the pint in ten days be reduced to a pint in thirty days, with the

agreement that additional amounts might be ordered when necessary. But on the occasion of ordering an additional amount the physician would be required to make out a statement in duplicate, telling the reason for the additional amount and sending one copy by first mail to the State Prohibition Director, and the other with the prescription to the druggist.

The committee is still working on this matter, and hopes to accomplish something more satisfactory during the next few months.

The Board of Trustees adopted the following resolution, which was approved by the House, and is of such importance that we think it had best be presented to you in full, feeling that the Medical Society of Virginia might well take similar action:

"WHEREAS, The Veterans' Bureau provides hospitalization, medical and surgical care, and nursing, for many persons suffering from diseases and injuries of civil life without any relation whatsoever to military service, and provides for the transportation of the patients between their homes and the places of treatment, without cost to the patients so treated and at the sole expense of the taxpayers of the country, and

WHEREAS, Private hospitals, and physicians, surgeons and nurses, that depend for their support and activities on fees paid by patients for services cannot compete with the Veterans' Bureau on the basis stated above, and

WHEREAS, The service rendered by the Veterans' Bureau at public expense is not a pension to which a veteran is entitled because of disability incurred in line of duty, inasmuch as it has no relation whatever to the existence or extent of any such disability, and is not a philanthropic provision by the Federal government to meet the needs of the destitute, inasmuch as it is available to both rich and poor, but is simply a gratuity provided by the government at the expense of the taxpayer; and

WHEREAS, Legislation is pending in Congress to enlarge and to perpetuate the system of gratuities thus established; therefore be it

RESOLVED, That it is the sense of the Board of Trustees of the American Medical Association that no legislation that provides for the enlargement or perpetuation of the treatment of patients by the Veterans' Bureau for diseases and injuries having no relation to military service, without cost to the patient but at the expense of the taxpayer, should be enacted; and be it further

RESOLVED, That it is the sense of the Board of Trustees that legislation should be enacted to discontinue as speedily as possible the present system of providing for the treatment of such patients at public expense."

Feeling that much harm is being done by poisonous cosmetics, the Association is making every effort to have passed a national law on the subject.

The Council on Medical Education and Hospitals reported a falling off in the number of Section Schools from 171 in 1920, to 96 in 1927, with a large decrease in the number of students.

The Committee on Medical Relief in Disaster made a splendid report of the work of the county medical societies in the Mississippi Flood Relief.

It is urged that every county society be prepared to take a part in disaster relief in conjunction with the Red Cross.

One of your delegates introduced four resolutions, as follows:

1. That arrangement be made with the colleges so that medical students can graduate at an earlier age than at present; that if possible the course be shortened, as is proposed for Duke University, and that more attention be paid to teaching the essentials and less to the specialties. Adopted.

2. That the time of meeting of the Association be arranged so as not to conflict with the commencements of the Medical Schools, it being important that professors of these schools should attend the meetings of the American Medical Association. Adopted.

3. That the president of each State Society be made an ex-officio member of the House of Delegates, in order that he might be kept in closer touch with its affairs. Not adopted.

4. That a more elastic arrangement be made for the appointment of alternate delegates, so that each State shall always be provided with a full delegation. Deferred.

Mrs. J. O. McReynolds, President of the Woman's Auxiliary, addressed the House of Delegates at some length, detailing the work accomplished by her organization.

In several of the reports made to the House of Delegates, the Woman's Auxiliary was commended for productive efforts in various lines, especially the extension of the circulation of "*Hygeia*" and in health work.

The House of Delegates met on Monday morning, Tuesday morning, and Thursday afternoon.

There were 157 delegates in attendance, representing each State, the Canal Zone, the Philippines, Porto Rico, the Army, the Navy and the Public Health Service, and each of the scientific sections.

Virginia had a full delegation.

The Scientific Assembly in its various sections was well attended and accomplished much.

The scientific exhibits and the commercial exhibits were of the highest order.

Dr. M. L. Harris, of Chicago, was named as president-elect.

For the next place of meeting, Portland, Oregon, defeated Atlantic City by a vote of 96 to 44.

Respectfully submitted,

J. W. PRESTON,
ENNION G. WILLIAMS,
SOUTHGATE LEIGH,
Delegates.

It was ordered that this be received and filed.

The next order of business was reports of the Standing Committees. The President stated that if a chairman was absent when his report was called, such report would be taken up at a later session.

PUBLIC POLICY AND PUBLIC HEALTH: This report was presented by its chairman, Dr. Lawrence T. Price, following the reading of which, it was ordered that this be received and filed.

Report of Committee on Public Policy and Public Health.

The revised Medical Practice Act of Virginia, as recommended by the special committee on the Revision of the Medical Practice Act of Virginia, presented at the Petersburg meeting, was turned over to this committee for the purpose of amending and re-enacting the Medical Practice Act existing at that time.

Your committee at once proceeded to perfect plans to that end. Committees were appointed in the various congressional districts to inform the candidates

for nomination to the General Assembly on matters contained in the Medical Practice Act. The result of this work was that at least two-thirds of the elected members of the House of Delegates and of the Senate were known to be in favor of any revision of the Medical Practice Act recommended by the Medical Society of Virginia.

There had been considerable activity by the National, State and local chiropractors, which activity continued throughout the meeting of the General Assembly, and until the signing of the Act by the Governor on March 29, 1928. The fight at times was very tense, which necessitated the calling upon physicians all over the State either to come to Richmond for committee hearings, or activity in their communities in behalf of the Bill which was known as House Bill 199. The chiropractors employed Mr. D. C. O'Flaherty, Richmond attorney, and Hon O'Conner Goolrick to represent their interests.

The outcome of the whole was the favorable recommendation of the House Committee on General Laws by a vote of 12 to 1. The Bill was passed by the House of Delegates by a vote of 55 to 22 (23 not voting or absent), and out of the Committee of the Senate on General Laws, first by a vote of 6 to 4, and on a rehearing unanimously, and was passed by the Senate by a vote of 32 to 3 (5 not voting).

At this point, the attorneys for the chiropractors made a strenuous effort to convince the Governor that the Bill was unconstitutional, which effort was unsuccessful, and resulted in the Governor signing the Bill.

Credit for untiring work is due to the members of the committee, Mrs. H. U. Stephenson, P. St. L. Moncure, J. M. Emmett and Ennion G. Williams, your President, Dr. J. W. Preston; President-elect, Dr. J. Bolling Jones; the Society's attorney, Mr. Robert H. Talley, and certain members of the General Assembly.

The cost of this special work was covered by a special appropriation of $500 00, authorized by your Executive Committee.

A Bill to repeal the DeCollard Poropath Bill, enacted during the General Assembly of 1918, was successfully passed without difficulty of any consequence.

A third Bill, pertaining to prohibiting the operation of a diploma mill, or practicing by any one graduating from a diploma mill, was introduced by your committee but, because of considerable confusion about the merits of this Bill, resulted in your committee deeming it advisable not to press the Bill. This Bill reached a sub-committee from the Committee on General Laws and was never reported out from that committee. This situation was the result of request of your chairman of this committee.

There were no other matters called to the attention of this committee for their consideration.

Respectfully submitted,

LAWRENCE T. PRICE,
Chairman.

MEDICAL DEFENSE AND ECONOMICS: The report of this committee was presented by its chairman, Dr. Lawrence T. Price, as follows:

Report of the Chairman of the Committee on Medical Defense and Medical Economics.

During the past year there have been six cases of alleged malpractice which have engaged the attention of your Committee on Medical Defense and Medical Economics, two cases in Richmond, one in Newport News, one in Mount Airy, N. C., and two in Roanoke.

The cases in Newport News and Mount Airy resulted in an exoneration of the doctors.

The jury gave a verdict of $1,500.00 to one of the cases in Richmond, which has not been terminated. The judge sustained the motion of the attorneys of the defendant to set aside the verdict; however, the plaintiff has a right to appeal from this decision.

The other Richmond case has had two trials, which resulted in a hung jury in both instances. The attorneys for the prosecution have declared that they intend to try the case again.

One Roanoke case has been completed with the defendant receiving a verdict, by a jury, of $4,000.00 damage. The second Roanoke case has not come to trial as yet.

The committee has expended $800.00 for the defense of its members for alleged malpractice suits since the last meeting of this Society.

The committee has recommended certain regulations governing its work to the Committee on Revision of the Constitution and By-Laws of the Medical Society of Virginia, as we have found that the present Constitution and By-Laws do not cover the necessary features whereby the committee can do its work efficiently.

The committee respectfully calls attention to the increasing number of suits against the members of the Society for alleged malpractice and suggests that the members of the Society who are not carrying insurance for their protection secure same at once.

The committee further calls attention to the fact that the amount of money set aside for the defense of the members of the Society is inadequate to meet the apparent future demands, and that serious consideration in that direction is urged.

Respectfully submitted,

LAWRENCE T. PRICE,
Chairman.

It was ordered that this report be received and filed.

MEDICAL EDUCATION AND HOSPITALS: Dr. J. Allison Hodges, chairman, presented the report of this committee, following the reading of which it was ordered that it be received and filed.

Report of Committee on Medical Education and Hospitals.

Two committees from National associations have been appointed during this year; the one, to report on one phase of Medical Education, Extension Work in Graduate Medical Education, and the other, to report on Hospital Training Schools.

In view of these facts, your committee prefers to await these investigations, for it is believed that what is true generally of the National situation, is also true of conditions existing in this State, and the facts elicited in this comparative study, and the remedies suggested in these reports will be transmitted later to this Society.

In order, however, that the membership may be informed fully as to the present status of the composition of these National committees, the preliminary surveys proposed, the methods employed, etc., a supplemental informative report, giving in brief these details, as far as they are outlined at the present time, is herewith also submitted.

J. ALLISON HODGES,
MURAT WILLIS,
SOUTHGATE LEIGH,
CLARENCE P. JONES,
L. T. ROYSTER,
Committee.

A Supplemental Report of Committee on Medical Education and Hospitals, Concerning Some Factors Influencing Medical Education and Hospital Service.

1. *Extension Graduate Medical Education.*

Plans for making available extension courses for physicians unable to leave their practice have been in operation now for several years.

North Carolina in 1916 was the first State to organize under the auspices of the State Board of Health, the local Medical School and the University of North Carolina. The itinerary system was adopted. The expenses of organization were borne by the University and the State Board of Health, while the salary and traveling expenses of the instructors were paid by the local physicians of each center in towns from 1,500 to 50,000 population.

This work has been continued to date, and has been carried on with gratifying success, forty to forty-five per cent of physicians in active practice at designated centers attending the series of twelve lectures, at a tuition cost of $30.00 for each physician.

This plan with various modifications has been adopted now by nine other States, but it is probably true that New York, which organized Extension Graduate Courses in 1922, has done more than any other State to raise the local standards of general practice.

Recently, also, the Albany Medical College has determined to increase its post-graduate facilities, and to this end has raised the sum of $3,000,000.00 so as to render country practice more attractive. In addition to this, it has established a department for the regional extension of medical practice, which is virtually a "clearing house for communities in the State needing physicians, and for physicians seeking locations."

Looking towards the same end, your President will later inform you of tentative plans proposed for the future development and administration of Post-Graduate Medical Work in this State. Also, as an evidence of the increasing interest in medical courses and their probable effects upon the future trend of medical practice, attention is called to the substance of a resolution offered at the last American Medical Association by our Senior delegate, Dr. Leigh, and which was endorsed by the Council on Medical Education and Hospitals as follows:

1. That it would be desirable that medical students should graduate and enter practice at an earlier age than at present;

2. That the plan of covering the medical course in three years of four quarters instead of in four years of three quarters, or any other adequate plan for reducing the length of the medical course, is greatly to be desired;

3. That the medical course is overcrowded with details and with detailed consideration of specialties and would be improved by less crowding with a course confined more nearly to the essentials, and that efforts to this end should be made.

These, and other facts that might be adduced, show in part, the dissatisfaction prevailing in the profession, and the spirit of unrest among the laity brought about, principally, because of the conditions and restrictions now governing medical courses and hospital training schools.

II. *The High Cost of Ill-Health.*

This factor constitutes a problem which has always existed, but probably more acutely now than ever before. Secretary Olin West says that the outstanding question before the profession today is "the delivery of adequate, scientific medical service to all the people, rich and poor, at a cost which can be reasonably met by them in their respective stations in life."

The real problem, to our minds, is to help the average man, this representative of the people of moderate means who constitutes 75% to 90% of the population; for the rich and poor are untroubled by medical costs; the one, can afford them, and the other gets his service free.

To meet this complex situation, a committee on the Cost of Medical Care has been set up, hoping thereby that the public may be aided in developing health consciousness, and that the profession may be relieved to some extent, for at present the cost of the care of the needy sick in its final analysis, is borne by two small groups, the philanthropists and the medical profession.

If there were an equable distribution of the cost of sickness, the physician would be able to care for his less opulent patients for fees which they could better afford to pay.

This problem, in its entirety, is to be the task of this nationally representive committee, which for the first time has been carefully organized for this great work.

It consists of forty-two individuals. Of these, fourteen are private practitioners of medicine, six are representatives of the field of public health, eight represent institutions interested in medicine, five are economists, and nine represent the general public. It is under the chairmanship of Dr. Ray Lyman Wilbur, president of Leland Stanford University, and ex-president of the A. M. A.

Financially, the committee's work is assisted not only by the medical profession, but by several of the well-known health and educational foundations, the inauguration of its five-year program having been made possible by the support of the Carnegie Corporation, the Milbank Memorial Fund, the Russell Sage Foundation, the Twentieth Century Fund, the Metropolitan Life Insurance Co., the United States Public Health Service and other agencies. Meanwhile, the American Medical Association is planning to make synchronous studies at its own expense.

Dr. Wilbur says: "The Present cost of illness to the people of the United States is probably over $5,000,000,000 per year, and there are more than a million persons engaged in curing and preventing disease, of which 140,000 are physicians, and more than five billions invested in hospitals and other equipment. Nevertheless, a large group of persons are not receiving needed medical treatment at costs within their means. Complaints, and I fear some of them are justified, of high charges, are becoming more frequent. The cause of the difficulty, often, is the large number of separate bills which must be paid, not the amount of the physician's charge.

"Physicians, as a group, are not earning adequate incomes; and for many, hospitals and other facilities for scientific work are lacking. Nurses, and dentists too, fail to receive satisfactory returns for their labors. Apparently, it is the present system which is at fault."

The committee's actual program, we are told, will consist of the three following groups of studies:

"1. Preliminary surveys of data showing the incidence of disease and disability requiring medical services and of general existing facilities for dealing with them;

"2. Studies on the cost to the family of medical

services and the return accruing to the physician and other agents furnishing such services; and

"3. Analysis of specially organized facilities for medical care now serving particular groups of the population."

The above studies, it is estimated, will cost over $300,000 during the five-year period.

Nothing similar to this has ever been undertaken and the results will be awaited with eagerness.

III. *The Economic Problem of Nursing.*

A not inconsiderable part of the cost of serious illness consists in the charges for private nursing.

Just as the student of the practice of medicine of today, which is more of a science than that of yesterday, is compelled to consume more time and more money, so the present day nurse is likewise confronted with similar problems and the resulting cost of nursing service to the patient is becoming more burdensome.

To study these problems of nursing education, the Committee on the Grading of Nursing Schools was organized in November, 1927, by the American Nurses' Association, and Dr. Nathan B. Van Etten was appointed to represent the general practitioner.

This committee has no authority to enforce its conclusions, but it is empowered to make a more exhaustive study and investigation than its name would indicate, and will be a joint committee representing the three great Medical Associations, the three great Nursing Organizations and the American Public Health Association, together with one representative for hospital trustees and for patients, and four representatives from the public and educational systems of the country.

The program has in view the study of three projects: first, a study of the supply and demand of nursing service; second, the tasks which the nurse must perform after graduation; and third, the grading of schools of nursing.

The committee has a five-year program, and is sponsored or financed by the American Nurses' Association, the National League of Nursing Education, the National Organization for Public Health Nursing, the American Medical Association, the American College of Surgeons, the American Hospital Association, the American Public Health Association, the Rockefeller Foundation, the Commonwealth Fund, etc., $104,868 having been pledged to date.

Up to this time only a part of the work, the Report on Supply and Demand of Nursing Service, has been completed, and a book of over six hundred pages, under the title of "Nurses, Patients and Pocketbooks," being a report of a study of the Economics of Nursing, conducted by the Committee on the Grading of Nursing Schools, has just been published. We have not read it, but attached herewith is a Book Notice of it, as reviewed in the *Journal of the American Medical Association*, under date of October 6, 1928:

"This is a report of a study of the economics of nursing conducted by the Committee on the Grading of Nursing Schools. The first chapters consist of an immense mass of facts and figures and of quotations taken verbatim from reports sent to the committee. Following these are several chapters in which are discussed the implications of this study. The data were gathered from hospitals, physicians, superintendents of hospitals and of nurses' training schools, and from nurses and patients in response to numerous questionnaires sent out by the committee. The author accepts the sole responsibility for the statistical processes followed in using the data thus collected. The 'implications' are also those of the author. The chairman of the committees states in the introduction that 'while the members of the committee are in substantial agreement with the ideas suggested in the text, they do not wish to imply, through the fact that they have authorized its publication, that each member has bound himself to unqualified approval of every word and phrase. The presentation is Mrs. Burgess' own.' Again: 'The facts are believed to be valid as presented. But the conclusions to be drawn from these facts must be determined by each reader for himself.'

"Some of the 'implications' in this book are amusing, if nothing else. For instance, tables showing the estimated number of physicians and of graduate nurses present in each year from 1925 to 1965 indicate that, if present tendencies continue, we shall have a relative decrease in the number of physicians and a greatly increased number of nurses, so that in 1965 the nurses will outnumber the physicians four or five to one. That is looking a long way ahead, but great concern is already expressed as to how so many nurses will be able to earn a living. In making these estimates, no consideration is given the economic laws of supply and demand in regulating the number engaged in these occupations.

"Great stress is laid on the necessity of a college education for nurses. No one will question for a minute the advantages of education, but few would go so far as the author in saying that, 'with rare exceptions, it is no longer possible for a woman to be socially respected unless she has gone beyond the first year of high school.' This is quite a slam at the intelligence of trustees of hospitals since it is shown that of the registered nurse superintendents of hospitals 77 per cent are not college graduates, and 40 per cent are not even high school graduates. Is it not unfortunate that so many hospitals are managed by women registered nurses who cannot be socially respected or 'have the respect of their colleagues'? There is such a thing as executive and business ability which is found in those who have not gone through college and, indeed, is frequently not found in those who have gone through college. Managing a hospital is a business proposition, not a social engagement. Of the registered nurse superintendents of training schools for nurses, 25 per cent were not even graduates of high schools, 40 per cent had had four years of high school, and only 35 per cent one or more years of college work. Here again it would seem that those having charge of training schools, for nurses have been derelict of duty in selecting so many incompetent persons to manage their schools.

"A most illuminating chapter is that on why superintendents of nurses in hospitals prefer students to graduates to take care of patients. 'Approximately five hundred superintendents of nurses replied to the question: "If you had your choice, which would you rather have to take care of your patients—student nurses or graduate nurses?" Seventy-six per cent replied emphatically that they would prefer student nurses, and only 4 per cent voted for graduate nurses.' The author draws the 'implication' or conclusion 'this astonishing and overwhelming vote' that the hospitals conduct training schools for the purpose of getting cheap nursing and more work out of the student. There is, however, nothing in the replies from the superintendents published that would warrant such an implication, as the replies are, in brief, to the effect that student nurses are more cooperative and conscientious; student nurses take more responsibility and are more economical

with food, linen and supplies; graduates on general duty are demanding, exacting and shifting; doctors think the students are more careful, steadier, and pay more attention to business; student nurses are more adjustable, have more uniform technic; student nurses work together with less friction, and so on. This is the general trend of the replies and none of them claim that it is to cheapen hospital service. In the replies received from physicians and patients many individual complaints are made about nurses of all kinds, registered nurses, graduate, trained, practical and otherwise. If there is one thing more than another that stands out in this connection, it is that there are good nurses and bad nurses of all kinds, and that the essential qualities of a good nurse are an inherent adaptability and liking for the work, combined with an intelligent capacity for carrying out instructions acquired by study and practical training, and that any nurse who has not these qualifications, be she registered nurse or practical, college graduate or not, is not a good nurse.

"The book contains a great deal of interesting and instructive data that every one who is concerned with the subject of nursing should read, but it should be understood that all of the implications and conclusions are those of a registered nurse who is strongly imbued with the idea that no one but a college graduate is capable of making a good nurse or a superintendent of a hospital, and that no one but a college graduate should be permitted to enter a training school for nurses."

In a brief discussion such as this, touching only on the general aspects of the trend of Medical Education and Hospital Service, it is possible only to outline some of the tangential points at issue which affect the medical profession in some of its economic relations, but it will serve to emphasize the fact that the present systems do not adequately meet the needs either of the patient or of those who render the professional service.

Upon conclusion of this report, Dr. Hodges, with permission of the President, gave his report as chairman of the Special Committee on By-Laws of the Society, as follows:

Report of Committee on Revision of the Constitution and By-Laws of the Society

To the Members of the House of Delegates:

The Committee appointed at the last annual meeting of the Society to revise the Constitution and By-Laws, submitted its report in the October issue of the Virginia Medical Monthly.

Each Component Society in the State was requested to forward suggestions of any changes desired, and a number of these have been incorporated in the Committee's completed work.

The basic idea in the changes now presented has been, while guarding the best interests of organized Medicine and Scientific Research, to make the organization and operation of the Society more democratic, and thus further enlarge its service and increase the opportunities of its individual membership.

Special attention has been given likewise to the Medical Defense of Members, and it is hoped that the limitations imposed, will render this dangerous feature a benefit to those who may require its aid.

The thanks of this Committee are due the former Committee on Revision for its valuable assistance in their last report, and to all members of the Society who have made suggestions to these proposed amendments.

Respectfully submitted,
J. Allison Hodges,
J. Bolling Jones,
Charles R. Grandy,
Committee.

Following Dr. Hodges' report, Dr. Isaac Peirce moved, duly seconded, that the matter of the revision of the Constitution and By-Laws be laid on the table until next year. Being put to the vote, the motion was lost. Dr. Hodges then moved that a special hour be set aside to pass on the work of his committee. This was duly seconded and carried and the president set the hour for this work as 9 A. M., Wednesday, October 17.

Chairmen of the other standing committees being absent, reports were next taken up from the special committees.

Walter Reed Commission: Dr. E. C. S. Taliaferro, chairman, presented the following report, which it was moved should be received and filed:

Report of Walter Reed Commission

To the President and House of Delegates of the Medical Society of Virginia:

As Chairman of the Walter Reed Commission, I hereby beg leave to make the following report in regard to the activities of the Walter Reed Memorial. I am submitting as a part of this report a statement from Dr. Clarence Porter Jones, Treasurer, which shows that the Walter Reed Memorial still owes $578.00.

We owe the contractors $78.00, and I had to borrow $500.00 from the bank to pay the contractor for restoring the house to its present condition. The property has been put in perfect shape, the lawns kept mowed, and we are erecting signs on the public highways directing tourists to the Walter Reed home.

I would suggest that the Commission be allowed to appoint a large committee in the State composed of laymen, both men and women, as well as physicians. We have such committees appointed in the various States who are ready and willing to work as soon as we direct them. However, the Commission has thought it wise not to be too active outside of the State until the home was restored and paid for by Virginia. We have, however, received some outside contributions; for instance, the California Medical Society sent $200.00, and Yolola Medical Society $15.00.

Respectfully submitted,
E. C. S. Taliaferro,
Chairman.

Newport News, October 15, 1928.

Report of the Treasurer of the Walter Reed Memorial Commission.

Receipts

Contributions to date	$1,239.11
July 20, 1928, loan to the commission from the Chairman, Dr. E. C. S. Taliaferro	500.00
	$1,739.11

Disbursements

1927		
Aug. 9.	Contractor	$ 250.00
Aug. 27.	Travelling expense, phone, postage, stationery and incidentals (for past 2 years)	72.45
Sept. 15.	Contractor	250.00
Sept. 17.	Traveling expense and postage	30.00

Sept. 22. Photographer	25.00	
Sept. 29. Postage, telephone and telegraph	11.58	
Sept. 27. Seed and fertilizer for ground	30.35	
Oct. 12. Printing bill	26.00	
Oct. 24. Fire insurance, 5 years, $2,500.00	100.00	
Nov. 7. Telephone	4.55	
Oct. 27. Labor, erecting speaker's stand	15.48	
Oct. 27. Lumber for same	24.45	
Nov. 30. Contractor	100.00	
Dec. 13. Freight and seed	5.75	
1928		
Jan. 6. Contractor	220.00	
May 2. Contractor	50.00	
July 20. Contractor (advanced by chairman)	500.00	
	$1,719.33	
Cash on hand (in bank)	19.78	
	$1,739.11	$1,739.11
Amount of contract for restoring Belroi, Walter Reed's birthplace		$1,418.80
Amount paid contractor to date	$1,350.00	
Balance due contractor	68.80	
	$1,418.80	$1,418.80
Other costs incidental to restoration		369.33
Payments to date	$ 369 33	
The Commission owes its chairman for a personal loan		$ 500.00
Interest on the same for 3 months		7.50
		$ 507.50

CLARENCE PORTER JONES,
Treasurer.

MEMORIAL TO DR. EPHRAIM MCDOWELL: The chairman of this committee, Dr. E. P. Tompkins, reported that his committee was making good progress, although they had encountered several obstacles, one of which was that the landlady objected to the erection of what she termed a tombstone on her place. He stated that a compromise had been effected, however, and progress is now being made toward the erection of this memorial to Dr. McDowell.

By motion, this report was ordered received and filed.

CANCER EDUCATION: Dr. J. Shelton Horsley, chairman, presented the following report:

Report of the Committee on Cancer Education

The work of your Committee on Cancer Education has of necessity been somewhat merged with the work of the Virginia Section of the American Society for the Control of Cancer. As the same individual was chairman of both committees, it seemed best to merge the general scope of these two bodies and to ask all the members of the committee to participate in the activities of the Virginia Section of the American Society for the Control of Cancer. Under the auspices of this latter organization, the State has been organized as well as possible in senatorial districts, appointing some member of the Society in each of the senatorial districts the chairman for his district and giving him the power to organize a local committee consisting of doctors and laymen. These sub-committees of the State will be supplied with literature by the American Society for the Control of Cancer.

While of course this activity is not immediately under the auspices of the Medical Society of Virginia, the members of the committee appointed by the Society believe that your committee can accomplish more by aiding the Virginia Section of the American Society for the Control of Cancer than by working independently.

Respectfully submitted,
SOUTHGATE LEIGH,
H. H. TROUT,
STEPHEN H. WATTS,
J. SHELTON HORSLEY,
Chairman.

The members of this committee are as follows: Drs. S. W. Budd, Southgate Leigh, H. H. Trout, Stephen H. Watts, and J. Shelton Horsley, Chairman. All of these have approved this report except Dr. Budd, who desires to be recorded as opposing any merger of the work between the Committee on Cancer Education of the Medical Society of Virginia and the Virginia Section of the American Society for the Control of Cancer.

J. SHELTON HORSLEY, *Chairman.*

After reading the above report, Dr. Horsley recommended that his committee be discontinued, as the work is being taken care of by the American Society for the Control of Cancer.

Dr. Taliaferro moved, duly seconded, that the committee be retained and that this report be received and filed. Carried.

LIBRARY COMMITTEE: Dr. I. C. Harrison, chairman, presented the following report, which he stated was based on information furnished him largely by Dr. Stuart McGuire, a member of the committee:

Report of Library Committee

Referring to the report of the Library Committee, submitted at the meeting in Petersburg, October, 1927, we are informed that there have been some unavoidable delays in the erection of the library for the Medical College of Virginia and the home of the Richmond Academy of Medicine. There is, however, reason to believe that these buildings will be erected in the near future and under the circumstances your committee feels justified in advising the Medical Society of Virginia to postpone any definite action with reference to permanent headquarters and a library for its members.

Respectfully submitted,
I. C. HARRISON,
Chairman.

It was ordered that this report be received and filed.

HISTORY OF MEDICINE IN VIRGINIA: Dr. Beverley R. Tucker, a member of the committee, read the following report, which had been sent by Dr. Wyndham B. Blanton, chairman of the committee:

Report of Committee on the History of Medicine in Virginia.

To the Members of the House of Delegates:

Your recently appointed committee on the History of Medicine in Virginia has carefully canvassed the situation and has come to the following conclusions, which it wishes to bring to your attention in this report.

The History of Medicine in Virginia deserves to be carefully written, after assembling the wealth of material which we believe has never been brought to light. Due weight must be given to the economic, social and historical background of Virginia, and a consecutive narrative written. A mere biographical dictionary is not enough and must be avoided.

Considerable time and some money will be needed to carry on the necessary historical research demanded by the importance of this undertaking.

We therefore ask that this committee be empowered to employ a competent part-time worker to assist in this research. A college graduate capable of doing this can be secured half-time for eight months, for the reasonable sum of $400.00. We further request that $400.00 be assigned this committee for this year's work. The committee would require $50.00 additional for stamps and stationery.

Signed:
Wyndham B. Blanton,
Beverley R. Tucker,
F. C. Rinker,
Committee.

Dr. L. T. Price moved that this report be received and filed, that the committee be retained, and that the appropriation requested be recommended to the committee in charge of preparing the 1929 budget. Seconded and carried.

Post-Graduate Study by the State Society: Dr. Preston asked Dr. J. C. Flippin, a member of the committee, to report on what had been done by this committee.

Dr. J. C. Flippin, member of the committee, made a short report, which he stated was merely supplementary to the report of this committee, which appeared in the July, 1928, issue of the Virginia Medical Monthly. He further stated that the Extension Department of the University of Virginia, upon invitation of the committee, agreed to make a further careful study of the whole matter and to report at a later date.

This was ordered received and filed.

It was moved by Dr. N. G. Wilson, and seconded, that the Society reimburse Dr. Taliaferro for the amount which he had advanced in connection with the Walter Reed Memorial. Carried.

Dr. Taliaferro moved that a telegram be sent to Dr. John Staige Davis, a former president, stating the Society's pleasure at his steady improvement and regretting his inability to attend the present session. Seconded and carried.

The House then adjourned until Wednesday morning at 9 A. M.

October 17, 1928

The House of Delegates held a meeting in the Danville Hotel, Danville, Va., October 17, 1928, at 9 A. M. The meeting was called to order by the President, Dr. J. W. Preston, and a quorum was found present.

It was announced that, in accordance with action taken at the Tuesday meeting, a consideration of the revision of the Constitution and By-Laws would be the first order of business.

It was moved by Dr. Isaac Peirce, and seconded, that the discussion of each article in the Constitution and By-Laws be limited to five minutes. Carried.

It was then suggested that the proposed revision be read by the Secretary and acted on, article by article, as printed in the October issue of the Virginia Medical Monthly.

Following the reading, it was moved by Dr. Taliaferro, and seconded, that the Constitution and By-Laws be adopted as a whole as read, with the following changes:

CONSTITUTION

Article V.—*House of Delegates.*—Change the last part of the first sentence, commencing in the fifth line with the word "and" to read "and ex-officio the ten members of the Council."

Drop second sentence of second paragraph, after words "annual session."

Article VIII.—*Standing Committees.*—Change name of fourth committee to "Medical Economics" and seventh to "Ethics and Judiciary."

By-Laws

Article I, Section 1, second paragraph, in fourth line, insert the word "active" between "but" and "members."

Article II, Section 2, drop the third sentence beginning "The name," etc., and substitute the sentence, "When a component society qualifies, it may obtain a charter upon application to the Executive Secretary-Treasurer, said charter to be signed by the President and the Executive Secretary-Treasurer."

Section 6. Substitute for last four words "on account of misconduct."

Section 7. Change name of "Ethics Committee" to "Ethics and Judiciary Committee."

Section 9. Omit last eight words, putting period after word "Society" in next to last line.

Article IV. Substitute the following for Section 1:

"The first assembly of the House of Delegates shall be held on the first day named for the annual session. Subsequent meetings shall be held at hours which will not conflict with the scientific program. The reports of standing committees shall be limited to fifteen minutes and the discussions of these reports to five minutes."

Section 2. At the end of this Section, add: "In case the full number of delegates accredited to a component society are not present at the meeting of the State Society, those members present from such component society shall, from the members of that society present, elect or appoint a sufficient number of delegates to complete its quota."

Section 5. At end of paragraph drop period and add "and Judiciary."

Article V. Section 1. Insert in second line, after "first meeting," the words "on the second day." In same section, at end of fourth line, change period to comma, and add words "who shall be nominated by the delegates present from that district, and, in event a district is not represented in the meeting, such nomination shall be made by the President."

Substitute the following for Section 6 of the same article:

"On the second day of the annual meeting of the Society, at such time and place as shall be designated by the President, Councilors shall be elected for a term of two years by the delegates from their respective Congressional Districts, those from the odd numbered Congressional Districts on odd years, and those from the even numbered Congressional Districts on the even years. At this time, should there be a vacancy in the membership of the Council and the district not represented in the meeting, the House of Delegates, on nomination by the President, shall elect a Councilor for that district."

ARTICLE VII. Section 2. Change the word "peacemaker" in second line to "advisor."

ARTICLE VIII. Change name of fourth committee to "Medical Economics" and of seventh committee to "Ethics and Judiciary."

In first paragraph, after naming committees, second line, change word "five" to "three," and in fourth line, insert word "and" in place of comma between "two" and "three," drop comma after "three" and also words "four and five" in fifth line.

Section 4. Change name of committee to "Medical Economics" and substitute following for that section:

"The Medical Economics Committee shall be the committee to which are referred all questions of the business relationships of the Society.

"The Medical Society of Virginia, upon adoption of this Constitution and By-Laws, abolishes the Medical Defense Department, except in so far as the common law holds the Society liable for the completion of its obligations, according to conditions set forth in the article on Medical Defense."

Section 7. Change name of committee to "Ethics and Judiciary" wherever used in this section.

ARTICLE IX. Drop the number of this article on Medical Defense and place the whole article at end of the By-Laws, after article entitled "When in Force." In its new position, preface this article with the following:

"*Explanatory Note as to Medical Defense*

"The following sections applicable to Medical Defense are in force until all obligations under the common law have been complied with, as the Society on October 17, 1928, voted to eliminate this feature.

"Until the above conditions shall have been fulfilled, the Committee on Medical Economics will function in lieu of the Medical Defense Committee named in this article."

Renumber Articles X, XI, XII, XIII and XIV to numbers "IX, X, XI, XII and XIII," respectively.

Under Article on Dues (renumbered IX), drop second paragraph of Section 1.

In Section 3, first line, of this article, after "Honorary members" insert words "or others deserving it, at the discretion of the President."

In Section 4, first line, after "Society" insert words "for membership."

It was moved by Dr. Kendig, and duly seconded, that the Committee on the Revision of the Constitution and By-Laws go over the corrections ordered and see that they had been properly made. Motion carried.

It was next moved by Dr. J. A. Hodges, and seconded, that, as the By-Laws under which this meeting was operating stated that "the meetings of the House of Delegates shall be during the annual session," for purposes of legality, this body approve the action taken at the special meeting on Tuesday, with regard to reports presented, etc. Carried.

The next business before the House was the reports of committees which had not been heard.

SCIENTIFIC WORK: Its chairman, Dr. John S. Horsley, Jr., having left the meeting, the President requested a member of the House to read the report.

Report of Committee on Scientific Work

To the Members of the House of Delegates of the Medical Society of Virginia:

The Committee on Scientific Work offers the following report:

During the year 1927-28, letters were written to the Chief of Staff of each hospital and to the President of each County and District Society in Virginia, inviting them and their colleagues to present Scientific Exhibits at the fifty-ninth annual meeting of this Society in Danville. Suggestions were made as to the types of exhibits which would prove of scientific and educational value. The County and District Societies, particularly, were requested to try to arrange a display of instruments and appliances of historical scientific interest. Considerable enthusiasm has been manifested during the year by a much larger group of members than those represented in the exhibits now being shown.

Our committee is glad to report the most varied and the largest Scientific Exhibits in the history of the Society. They are as follows:

1. Display from Headquarters, American Medical Association, Chicago.
2. Commonwealth of Virginia, Health Department Laboratories, Richmond, Norton, and Harrisonburg, Virginia. Exhibit on Communicable Diseases, Including Tularemia.
3. Dr. J. B. Nicholls, Catawba Sanatorium, Virginia. Technique and Indications of Pneumothorax.
4. Dr. Churchill Robertson, Mt. Regis Sanatorium, Salem, Virginia. Exhibit of X-ray pictures of Thoracoplasty and Diagnostic Use of Lipiodol.
5. McGuire Clinic, Richmond, Virginia. Thyroid (pathologic specimens) and X-ray exhibit.
6. Dr. Austin I. Dodson, St. Elizabeth's Hospital, Richmond, Virginia. Drawings of cystoscopic and operative views of Lesions of the Bladder.
7. Dr. J. Shelton Horsley, St. Elizabeth's Hospital, Richmond, Virginia. Drawings of Lesions of the Stomach and Intestines with Technique of Operation for Partial Gastrectomy.
8. Dr. Chas. Phillips, Medical College of Virginia. Illustrative explanations of some terms often found on pathological reports.
9. The American Society for the Control of Cancer, New York City.
10. American Social Hygiene Association, New York City. Exhibit on Venereal Diseases, stressing their importance, incidents, treatment, public health phases of, etc., including a three-reel moving picture on Syphilis.
11. University of Virginia Hospital, Charlottesville, Virginia. Gross and microscopic specimens and X-ray pictures of Bone Tumors, by Drs. W. H. Goodwin and V. W. Archer. Pictures of Foreign Bodies Removed from the Esophagus and Bronchi, by Dr. F. D. Woodward.

The committee has called on the Society for $92.23 of the $100.00 appropriated for its work.

In closing the report, the committee wishes to offer the suggestion that those who succeed to our places will attempt further to arouse interest and enthusiasm in this feature of the program, so that from year to year marked improvement may be noted in the quality and quantity of exhibits.

We wish to take this occasion to acknowledge with appreciation the assistance rendered this committee by Dr. J. W. Preston, President of the Medical Society of Virginia; Dr. I. C. Harrison, General Chairman of Committee on Arrangements, and Dr. J. A. Hawkins, Local Chairman of Exhibits.

Respectfully submitted,
JOHN S. HORSLEY, JR., *Chairman,*
H. E. JORDAN,
J. B. NICHOLLS,
CHARLES PHILLIPS,
W. R. WHITMAN,
Committee.

It was ordered that this be received and filed.

PROGRAM AND PUBLICATION: Dr. E. L. Kendig, a member of this committee, was asked to present the report which had been sent by its chairman, Dr. A. G. Brown, Jr.

Report of Program and Publication Committee

The work of this committee for the current year has been largely routine. Sessions of the committee have been called to consider matters that have needed action as occasion arose.

The selection of the subject for the annual meeting was made after a careful inquiry. "The Anemias" was the subject selected for the symposium. This was divided into kindred topics and leaders were invited to treat these subdivisions. We expect of this symposium an interesting consideration of the subject of anemia.

The committee determined, after careful inquiry, to adopt a cover for the VIRGINIA MEDICAL MONTHLY. The selection of the "blue" was a matter of taste, and it is hoped that this may meet with favorable criticism.

It was the hope of the Program and Publication Committee to secure for this meeting, the Harvey film. As is known, this moving picture film was made for the occasion of the tercentenary of Harvey's publication of his experiments, observations and conclusions upon the circulation of the blood. The Royal College of Physicians, of London, caused the film to be made and presented it at the meeting of the Harvey Tercentenary Celebration in May last.

Every reasonable effort was made to secure this film, for demonstration at this meeting. But the time element frustrated our efforts. The film has failed to reach this country, although it is probably on the way at this time. It is regretted that Virginia doctors will be denied the opportunity to be the first to see this remarkable demonstration of the work of that distinguished English doctor, who in 1628 promulgated that epochal physiologic discovery of the circulation of the blood, thus lifting the veil of ignorance of this great fundamental fact, that had for ages before darkened the vision of medical knowledge.

ALEX. G. BROWN, JR., *Chairman.*

This was ordered received and filed.

BUDGET COMMITTEE: Dr. E. L. Kendig, chairman, then presented the report which had been prepared by his committee and it was moved, seconded and carried, that this report be adopted for use during the coming year.

MEMBERSHIP COMMITTEE: It was stated that Dr. J. A. White, chairman, had presented his report at the general meeting Tuesday night, at which time he read the names of twenty-eight members whose deaths had been reported since our 1927 meeting.

ETHICS AND JUDICIARY: No member of this committee being present, the report sent by its chairman, Dr. William F. Drewry, was read as follows:

Report of the Ethics and Judiciary Committee

To the House of Delegates of the Medical Society of Virginia:

The Judiciary Committee respectfully submits the following report of its activities during the past year:

One case was brought before the committee for investigation. The charge against a member was for unethical advertising in the public press. The member against whom the charge was preferred appeared before the committee at a called meeting held in Richmond on April 14, 1928, the following members being present: Dr. Alex. F. Robertson, Dr. B. H. Kyle, Dr. W. L. Peple and Dr. W. F. Drewry. Dr. J. W. Preston, President of the Society and Dr. F. H. Smith, a member of the committee, were unavoidably absent.

After a thorough investigation of the charge, in which the papers with the offending advertisement were presented, it was admitted by the member and his counsel that these advertisements had been put in by the member. Therefore, there was no issue of fact before the committee.

The member against whom the charges were preferred stated that he had discontinued the practice as soon as he had received official notice that the charge had been preferred against him. He further stated that he would cease advertising altogether. He stated that in extenuation of what he had done he wished to call attention to the advertisements in the public press of the various State Orthopedic Clinics and their meetings in various cities. He brought along copies of papers with these announcements, which the committee readily consented to incorporate in its records.

After going into the matter fully and thoroughly, your committee found the member guilty as charged, but in view of his promise not to offend again, your committee recommends clemency in his case.

W. F. DREWRY, *Chairman.*

It was moved, seconded and carried that this report be filed.

Other reports were deferred until the Thursday meeting.

It was moved by Dr. Price, duly seconded, that the Committee on Post-Graduate Study be continued and that it cooperate with the standing committee on Medical Education and Hospitals. Carried.

There being no further business, the meeting adjourned to meet at 9 A. M., Thursday, October the 18th.

October 18, 1928

The House of Delegates held its meeting on this date in the Danville Hotel, Danville, Va., at 9 A. M. Dr. Preston, President, called the meeting to order and a quorum was found present.

It was moved and duly seconded that, to save time, the reading of the minutes of the previous meetings of the House be dispensed with. Carried.

Names of the following members for the Nominating Committee, nominated by delegates from their respective districts, were then approved by the House:

1st District—Dr. A. W. Lewis.
2nd District—Dr. E. C. S. Taliaferro.
3rd District—Dr. L. T. Price.
4th District—Dr. W. C. Harman.
5th District—Dr. I. C. Harrison.
6th District—Dr. J. R. Garrett.
7th District—No name.
8th District—Dr. M. B. Hiden.
9th District—Dr. P. D. Pence.
10th District—Dr. A. F. Robertson.

It was moved, seconded and carried that the committee be given a recess in which to prepare a ticket with names of officers to be voted on.

The courtesy of the floor was extended to Dr. Mary E. Brydon, who gave an interesting and instructive talk on "Child Health." As director of the Bureau of Child Health of the State Department of Health, she is working to put over a campaign to

have all school children taken to their family physicians for examination, with a view to getting defects corrected and keeping well children well. In appearing before the House, she asked the cooperation of family physicians, especially, in this work.

Following Dr. Brydon's talk, motion was made by Dr. T. A. Kirk, and seconded, that a special committee of five family physicians be appointed from various sections of the State to work in cooperation with the State Board of Health, this committee to be known as the Child Welfare Committee of the Society. Carried.

The Nominating Committee now announced that it was ready with its report.

The President appointed Drs. R. A. Bennett and Lawrence T. Price as tellers to count votes for officers.

From the ticket presented, Dr. Charles R. Grandy, Norfolk, was elected president-elect, and Miss Agnes V. Edwards, executive secretary-treasurer.

It was announced next that Dr. Southgate Leigh, by virtue of election last year, remained a delegate from our Society to the American Medical Association. The following delegates and alternates were then elected by ballot for a term of two years each: *Delegates*, Drs. J. W. Preston and Murat Willis; *Alternates*, Drs. E. C. S. Taliaferro, E. G. Williams and J. C. Flippin.

Upon nomination of delegates from their respective districts, the following councilors were elected for a term of two years:

2nd District—Dr. E. C. S. Taliaferro, Norfolk.

4th District—Dr. Wright Clarkson, Petersburg.

6th District—Dr. R. A. Bennett, Bedford.

8th District—Dr. J. E. Knight, Catlett.

10th District—Dr. J. F. Fulton, Staunton.

Invitations were extended by the Albemarle County Medical Society and the Lynchburg and Campbell County Medical Society to meet next year in Charlottesville and Lynchburg, respectively. Being put to the vote, Charlottesville was elected as the 1929 place of meeting.

Dr. J. Allison Hodges stated that his committee had looked over the Constitution and By-Laws, with a view to seeing that they were in form to be printed. They found them with corrections as ordered, but suggested that an explanatory note accompany the article on Medical Defense until such time as the article on this feature could be eliminated. It was ordered that this be done.

Dr. Hodges then said that he and his committee wished to express their appreciation of the help which had been given them by members of the Society and moved that, as the committee had completed its work, it be discharged. This was amended by Dr. P. St. L. Moncure, and seconded, that it be discharged but be given a rising vote of thanks for its excellent and arduous work.

Dr. E. C. S. Taliaferro moved that the meeting give a rising vote of thanks to the Pittsylvania County-Danville Medical Society and thus express our appreciation of the entertainment and courtesies extended to the Society as a whole and to each of its members. This was seconded and carried.

Two committees which had not been heard from were next called for reports.

To Investigate Training of Midwives in Virginia: In the absence of any member of the committee, the following report was read:

Report of Committee to Investigate Training of Midwives in Virginia

To the House of Delegates, Medical Society of Virginia:

The Committee to Investigate the Training of Midwives in Virginia, appointed at the last meeting of the Medical Society of Virginia, held in Petersburg, was organized November 13, 1927.

The various members of the committee were assigned certain phases of the problem for investigation, and to these they were asked to devote their energies. The subjects were as follows: (a) Establishment of Dispensaries in the Hospitals of the State for the care of indigent pregnant women; (b) Further education of the midwives; (c) Instruction to pregnant women; (d) Establishment of public health nurses in counties where there are none now.

Papers were read upon the subject of prenatal care by members of the committee at Virginia Beach, Tazewell, Charlottesville and Danville medical meetings and a discussion of the problems being studied by the committee was carried on with the local members of the medical profession at each of these various places. Attempts were made to encourage the establishment of dispensaries in local hospitals, so far without success.

The county health nurses were instructed at their annual meeting held in Richmond, November, 1927, to be more diligent in getting pregnant women in their counties to consult the local doctors.

A letter was sent to every doctor in the State of Virginia telling him of this instruction to the county health nurses and bespeaking his cooperation. With each letter was enclosed a Children's Bureau pamphlet entitled *Minimum Standards of Prenatal Care.*

A pamphlet entitled "Prenatal Care" has been written by the State Department of Health in conjunction with the committee. The State Health Department has been requested by the committee to distribute this pamphlet to all new-weds in the very near future.

Your committee suggests that this committee be discharged but that another committee entitled "The Maternal Welfare Committee of the Medical Society of Virginia" be appointed to carry on the work begun by this committee.

Respectfully submitted,

Greer Baughman, M. D., *Chairman,*
P. W. Miles,
Mary Evelyn Brydon, *Secretary,*
L. A. Calkins,
J. Bolling Jones,
Committee.

It was moved and seconded that this report be received and filed, with the recommendation that its name be changed to Maternal Welfare Committee of the Medical Society of Virginia. Carried.

To Investigate Problems Pertaining to Laboratory Technicians: No member of this committee being present, the President requested that it be read:

Report of Committee to Investigate Problems Pertaining to Laboratory Technicians

To the House of Delegates, Medical Society of Virginia:

The special committee of the Medical Society of Virginia, appointed two years ago to investigate conditions in the State concerning laboratory technicians, has continued its activities during the past year largely through its chairman and secretary. It

has been thought best not to call in the members of the committee for a full meeting, for no important action was needed to justify the expense. In lieu of this the chairman has been writing widely all over the State and elsewhere to people and places interested in the situation, with the view of bettering the relations between the medical profession and the technicians. Apparently, an increasing number of young ladies and an occasional man are interested in becoming technicians and several training places have been flooded with applications from people of all kinds of education. Several of us have been definitely discouraging the entrance into this work of young people with less than high school graduation or its equivalent and believe that the medical profession should support this minimum educational standard. Both of the State medical schools are actively engaged in technician training with one of them including a course in its curriculum. Several hospitals and the laboratory of the State Board of Health are also engaged in training these girls and we believe that slowly a better educated group is receiving a better training with obvious advantages to all concerned.

During the year the secretary of this committee, Mr. A. H. Straus, has changed his business location and since becoming disconnected with actual training has resigned as secretary, although still deeply interested in the problem.

The chairman acting for the committee requests continuation of a committee of this type with both medical colleges represented on its membership and that the members of the Society when talking with prospective technician students stress the seriousness of the work and its educational needs rather than its ease, short training and popularity. Unless all of us do this, there is real danger of an overcrowded field with poorly equipped workers.

In closing, the chairman wishes to thank many members of the Society for their friendly counsel and the President for an opportunity to serve our State in this capacity.

Respectfully submitted,

CHARLES PHILLIPS, M. D., *Chairman.*

It was moved, seconded and carried that the report be received and filed and that the committee be retained.

It was moved by Dr. Taliaferro, seconded and carried, that the meeting give Dr. Preston, the retiring president, a rising vote of thanks for his splendid service during the past year. This was acknowledged with appreciation by Dr. Preston.

It was moved by Dr. J. A. Hodges, and seconded, that Dr. J. W. Preston be made an honorary active member of the Society. Carried.

It was moved by Dr. Taliaferro, seconded by Dr. T. A. Kirk, that a vote of thanks be given the Committee on Public Policy and Public Health for its splendid work during the past year. Carried. This was acknowledged with appreciation by Dr. L. T. Price, chairman of the committee.

Dr. Price then moved, duly seconded, that the Committee on Medical Economics be instructed to send out a questionnaire to the members of the Society to ascertain how many are carrying protective insurance, with a view to trying to secure a special rate through some company, if we can find a large enough number interested, this notice to carry announcement of the abolishment of the Medical Defense feature of the Society. Carried.

There being no further business, the House adjourned *sine die.*

AGNES V. EDWARDS,
Secretary.

Book Announcements

Criteria for the Classification and Diagnosis of Heart Disease. By a Committee—Joseph A. Bainton, M. D., Robert L. Levy, M. D., W. C. Munly, M. D., M. C., U. S. A., and Harold E. B. Pardee, M. D., chairman—appointed by the Heart Committee of the New York Tuberculosis and Health Association, Inc. Arranged in conformity with the Nomenclature for Cardiac Diagnosis approved by the American Heart Association. Paul B. Hoeber, Inc. New York. 1928. 12mo. of 92 pages. Flexible leather. Price, $1.50 net.

Syphilis: Acquired and Heredosyphilis. By Charles C. Dennie, B. S., M. D., Assistant Professor of Dermatology and Syphilology, University of Kansas School of Medicine; Member of the American Dermatological Association, etc. Harper's Medical Monographs. Harper & Brothers, Publishers. New York and London. 1928. 12mo. of 304 pages. Illustrated. Flexible leather. Price $2.50.

Transactions of the College of Physicians of Philadelphia. Third Series. Volume the Forty-ninth. Philadelphia. Printed for the College. 1927. Octavo of 305 pages. Cloth.

Sunlight the Health Giver; Just a Cold?; Headaches. Three pamphlets published by the Metropolican Life Insurance Company, Main Office, New York City. Limited quantities of any of these may be secured for use in connection with definite health activities.

Methods and Problems of Medical Education. Tenth Series. Division of Medical Education, The Rockefeller Foundation, 61 Broadway, New York, N. Y. 1928. Quarto of 351 pages. Paper.

Third Report of Commission of Medical Education. October, 1928. Pamphlet of 70 pages. Copies will be sent gratis upon request to Willard C. Rappleye, Director of Study, 215 Whitney Avenue, New Haven, Conn.

Education of Crippled Children in Wisconsin.

Wisconsin has provided for a yearly appropriation of $100,000 and an administrative fund to give State aid to local communities for the education of crippled children, and the work is being organized throughout the State.

The Passing of "Cholera Infantum."

Twenty years ago 4,000 children under five years of age died in New York City each summer of "cholera infantum." In 1927, though the population was fifty per cent greater than in 1901, only 246 children under five died from this cause. Compulsory pasteurization of the city's milk supply, inaugurated in 1913, and the work of the division of child hygiene since it was organized, in 1914, have contributed largely to this decrease.

Constitution and By-Laws
Medical Society of Virginia

Constitution and By-Laws of the Medical Society of Virginia, as Revised and Adopted at its Fifty-ninth Annual Meeting in Danville, Va., October, 1928

CONSTITUTION

Article I—Title

The name of this organization shall be the Medical Society of Virginia. The words "the Society" in this constitution and its By-Laws shall be construed to mean "the Medical Society of Virginia."

Article II—Purposes

The purposes of the Society are to promote the science and art of medicine, the protection of public health, and the betterment of the medical profession.

Article III—Component Societies

The State of Virginia shall be divided into component medical societies of one or more counties. The constitution and by-laws of these societies shall be in conformity with those of the State Society, and the principles of Medical Ethics of the American Medical Association shall govern the members.

Article IV—Composition of the Society

White physicians in Virginia, not practicing sectarian medicine, members of a component society, are eligible to active membership. Provision may be made for associate membership.

Article V—House of Delegates

The House of Delegates shall be the business and legislative body of the Society, and its membership shall consist of the delegates elected by the component societies, the President, the President-elect, and ex-officio the ten members of the Council. The Executive Secretary-Treasurer of the Society shall be an ex-officio member.

A report of the transactions of the House of Delegates shall be received at a general meeting of the Society before the close of the annual session.

Article VI—Council

The Council shall have charge of the business affairs of the Society when the House of Delegates is not in session, and shall prepare and present a budget for the ensuing year to the House of Delegates at its first session. The council shall consist of one member from each Congressional district of the State, together with the President and President-elect. The Executive Secretary-Treasurer of the Society shall be an ex-officio member of the Council.

Article VII—Officers

The officers of the Society shall be a President, a President-elect, who shall succeed to the Presidency at the end of the term, three Vice-Presidents, and an Executive Secretary-Treasurer. The office of the Executive Secretary-Treasurer may be held by a non-member.

The officers shall be elected during the annual session of the House of Delegates, and will begin service at the adjournment of the annual session and continue until the end of the term, or until a successor qualifies. The term of office shall be for one year.

Article VIII—Standing Committees

The Standing Committees of the Society shall be: (1) Scientific Work and Clinics, (2) Legislation and Public Health, (3) Publication and Program, (4) Medical Economics, (5) Medical Education and Hospitals, (6) Membership, and (7) Ethics and Judiciary.

Article IX—Annual Session

There shall be an annual session of the Society and the date and place of the meeting shall be determined by the House of Delegates.

Article X—Funds

Funds for the Society may be raised by a per capita assessment, voluntary contributions and other business activities. The funds shall be expended to carry out the general purposes of the Society.

Article XI—Seal

The Society shall have a seal bearing date of organization of the Society. The power to

change or renew the seal shall rest with the House of Delegates.

Article XII—By-Laws

The Society may adopt by-laws not in conflict with this Constitution.

Article XIII—Amendments

This Constitution may be amended at an annual session by a two-thirds vote of the House of Delegates, and ratified by the general meeting, provided such amendment is previously published in the official publication of the Society, at least a month before the annual meeting. All previous constitutions of the Society are repealed when this constitution is adopted and put into effect.

Article XIV—When in Force

This Constitution as revised shall be in force upon its adoption by the House of Delegates, and ratification by a general meeting of the Society.

BY-LAWS

Article I—Membership in the Society

Section. 1—Members of the Society are classified as active and associate. Active membership is based upon membership in a component society.

The active members of the Society shall be those who are members in good standing in component societies and those not members of component societies but active members of this Society in good standing at the time of the adoption of these By-Laws. All others not members of a component society shall constitute the associate membership.

Active members, who move out of the State, become associate members of the Society. Teachers of sciences allied to medicine and medical officers of the Army, Navy and Public Health Service, temporarily stationed in Virginia, may be elected to associate membership through component societies, or by the House of Delegates upon recommendation of the Membership Committee. Associate members may resign membership by giving notice to the Executive Secretary-Treasurer, or, on recommendation of the Ethics Committee, be suspended or expelled by the House of Delegates for sufficient cause. Any associate member, eligible to membership in a component society, may be required by the Council to make application for membership in such component society.

Section 2.—No one shall be enrolled as an active or associate member of this Society until the Executive Secretary-Treasurer has received his or her prorated annual dues.

Section 3.—The privileges of voting, holding office, and serving on committees is limited to the active membership. In all other respects the status of the active and associate members is the same.

Section 4.—For long, faithful or distinguished service, the House of Delegates, upon recommendation of the Membership Committee, may elect annually two resident members and one non-resident physician to honorary, active or associate membership.

Section 5.—Every member, after verification of good standing from the rolls, shall register and be given a membership badge before taking part in any of the proceedings of the annual session. All badges shall be furnished by the Society.

Section 6.—Each member shall be given a certificate membership card upon payment of his first annual assessment.

Article II—Component Societies

Section 1.—The component societies shall be those holding charters from the Society. All component county societies holding charters at the time of the adoption of these By-Laws will retain such charters as component societies.

Section 2.—There shall be only one component society in a county. A component society may embrace one or more counties. When a component society qualifies, it may obtain a charter upon application to the Executive Secretary-Treasurer, said charter to be signed by the President and the Executive Secretary-Treasurer. Should it seem desirable that a county unite with a county or counties in an adjoining congressional district, as a component organization, such action may be taken provided it be sanctioned by the councilor from each of the districts concerned. Such component organization shall be deemed to be in the jurisdiction of the councilor of the district in which the majority of the membership resides.

Section 3.—The Council shall endeavor to organize into component societies all the counties of the State. At each annual meeting the Council shall report to the House of Delegates the unorganized counties and recommend a plan for organizing each of such counties into a component society. The House of Dele-

gates may direct the Council to make further effort to organize such a county or it may assign an unorganized county to a nearby component society. Such assignment can not be made to a component society unless agreed to by the representatives of that component society in the House of Delegates.

Section 4.—A component society consisting of two or more counties may upon petition to the Council be divided and given separate charters, if the Council is of the opinion that such division is in the interest of medical organizaton.

Section 5.—Each component society shall judge the qualification of its own members.

Section 6.—A component society shall drop from its roll a member whose license to practice medicine in the State has been revoked or whose membership in the State Society has been lost on account of misconduct.

Section 7.—A member expelled by the component society can appeal to the State Society through the Ethics and Judiciary Committee.

Section 8—A member may join a more convenient component society in an adjoining county, provided the component society of the county in which such member resides gives its consent.

Section 9.—A member moving from a county of one component society to the county of another may secure a certificate of transfer in applying for membership in the component society to which such member is moving. Pending acceptance or rejection of such application, membership may be retained in the original component society.

Section 10.—Each component society shall send to each annual meeting of the Society, its number of delegates and alternates fixed by Article IV, Section 2 of the by-laws.

Section 11.—The Secretary of each component society shall keep a roster of its members, including name, address, year of graduation, college, date of State license, and such other information as may be desired by the Society. Once a year, not later than July the 1st, the secretary of each component society shall send a list of its members to the Executive Secretary-Treasurer of the State Society.

Section 12.—Each component society shall appoint one member as an auxiliary to the committee on Legislation and Public Health, to co-operate with that committee in its legislative and other work.

Section 13.—The component societies shall co-operate with the officers of the State Society to carry out the plans, laws and purposes of this organization.

Article III—General Meetings

Section 1.—The general meetings of the Society are open to all registered members and guests.

Section 2.—At each annual meeting there shall be an address by the President and not more than two orations by invited guests.

Section 3.—With the exception of the address by the President and invited guests, no address, paper, or other contributions on the program shall be longer than fifteen minutes.

Section 4.—No one shall discuss a paper more than once and then for only five minutes, except the leader of the discussion of a selected symposium who may be allowed a maximum of ten minutes.

Section 5.—No contribution shall appear on the program unless the title is sent to the Executive Secretary-Treasurer at least five weeks before the annual session, and only then when endorsed by the Program Committee. No member may present more than one paper at an annual session.

Section 6.—If the author is not present when a paper is called, it shall be placed at the end of that section of the program. An author who has been absent twice without having submitted a typewritten paper to the secretary for publication shall be debarred from the program for two (2) years.

Section 7.—All papers and contributions are the property of the Society and cannot be published first without the consent of the Publication Committee.

Section 8.—The scientific work of the Society may be divided into two or more sections.

Section 9.—In a general meeting, after the program of a section is completed and before the House of Delegates adjourns, a member may initiate any business matter not previously considered in the House of Delegates, to be acted upon by that body, provided a quorum of fifty (50) members be present in the general meeting.

Section 10.—A rule governing the program or conduct of a general meeting may be changed only by a two-thirds vote of the members present.

Article IV—House of Delegates

Section 1.—The first assembly of the House of Delegates shall be held on the first day named for the annual session. Subsequent meetings shall be held at hours which will not conflict with the scientific program. The reports of standing committees shall be limited to fifteen minutes and the discussions of these reports to five minutes.

Section 2.—Each component society shall elect annually to membership in the House of Delegates, one delegate and one alternate for each thirty-five (35) members or major fraction thereof, or as the component society may elect, one delegate and one alternate from each county in such component society. In any event, each component society is entitled to at least one delegate and one alternate in the House of Delegates. In case the full number of delegates accredited to a component society are not present at the meeting of the State Society, those members present from such component society shall, from members of that society present, elect or appoint a sufficient number of delegates to complete its quota.

Section 3.—Thirty delegates representing at least ten component societies shall constitute a quorum of the House of Delegates.

Section 4.—The President shall preside over the meetings of the House of Delegates. The Executive Secretary-Treasurer shall be the Secretary.

Section 5.—If the eligibility of any member is questioned, the president may appoint a committee on credentials to report on such member or refer the case to the Committee on Ethics and Judiciary.

Section 6.—The House of Delegates shall elect officers of this Society as provided for in Article V of the By-Laws.

Section 7.—The House of Delegates shall elect delegates and alternates to the House of Delegates of the American Medical Association in accordance with the constitution and by-laws of that organization. Such delegates shall be elected by ballot, and each member will be allowed to vote for as many of the nominees on the ballot as there are delegates and alternates to be elected. Those receiving the highest votes will be declared elected as delegates and those receiving the next highest votes will be declared elected as alternates.

Section 8.—The House of Delegates shall nominate to the Governor of Virginia at the proper time in accordance with the laws of Virginia, members of the State Board of Medical Examiners.

Section 9.—The House of Delegates, at each annual session, shall have authority to approve, modify or reject the budget recommendations presented by the Council for the ensuing fiscal year. In case a budget is not presented by the Council, the House of Delegates shall have authority to prepare the budget.

Section 10.—The House of Delegates may revoke the charter of a component society for violation of the laws of the Society.

Section 11.—The House of Delegates may appoint special committees from its own membership or from the membership of the Society.

Section 12.—The Executive Secretary-Treasurer shall make a complete yearly report to the House of Delegates at each annual session.

Section 13.—All officers and delegates elected, all nominations made to the Governor and a summary of all other business transacted by the House of Delegates shall be reported to the Society at a general meeting before the close of the annual session, in accordance with Article V of the Constitution.

Article V.—Election of Officers

Section 1.—The House of Delegates, at its first meeting on the second day, shall elect from its membership a Committee on Nominations, consisting of one member from each Congressional District who shall be nominated by the delegates present from that district and. in event a district is not represented in the meeting, such nomination shall be made by the President. This Committee shall report to the House of Delegates the result of its deliberations in the form of a ticket containing the names of one or more members for each of the offices to be filled at the annual session. Nothing in this section shall be construed to prevent additional nominations being made from the floor by members of the House of Delegates. The election of officers shall be by ballot and a majority vote is necessary for election. The lowest nominee will be dropped on each ballot until one receives a majority vote. In case of a tie, the president shall cast the deciding vote.

Section 2.—Only active members in good standing are eligible to office.

Section 3.—The House of Delegates shall at

each annual session elect a President-elect for a term of one year. No member of the Society who lives in the city or county in which the Society is holding its session shall be eligible to election to the office of President-elect for the succeeding year. At the end of this term, the President-elect shall automatically become President for a term of one year.

Section 4.—The House of Delegates at each annual session shall elect three (3) vice-presidents to rank accordingly, these to represent the various sections of the state.

Section 5.—The House of Delegates shall at each annual session elect an Executive Secretary-Treasurer for a term of one year.

Section 6.—On the second day of the annual meeting of the Society at such time and place as shall be designated by the President, Councilors shall be elected for a term of two (2) years by the delegates from their respective Congressional Districts, those from the odd numbered Congressional Districts on odd years, and those from the even numbered Congressional Districts on the even years. At this time, should there be a vacancy in the membership of the Council and the district not represented in the meeting, the House of Delegates, on nomination by the President, shall elect a Councilor for that district.

Section 7.—In case there is a vacancy in the office of President-elect, or in case the President-elect was appointed pro tempore by the Council, the House of Delegates at the annual session shall also elect a President for the following term.

Article VI—Duties of Officers

A. *President*

Section 1.—The President shall be the executive head of the Society.

Section 2.—The President shall be the presiding officer at the general meetings of the Society, president of the House of Delegates, chairman of the Council, and ex-officio member of all committees. The President shall vote in the general meetings, in the House of Delegates, and in the Council only in the case of a tie. If the President or the President-elect cannot be present, a Vice-president shall preside over the general meeting, the House of Delegates, the Council or special scientific sections.

Section 3.—The President shall deliver the annual oration and shall have the privilege of inviting as many as two orators at the annual session.

Section 4.—The President shall fill any vacancy occurring between annual sessions in the Council, delegates to the American Medical Association, and standing committees, and such appointments shall be valid until the end of the next annual session. He shall appoint any necessary special committees at the time he takes office, or during the year.

Section 5.—The President. in conjunction with the Committee on Publication and Program, shall prepare the annual scientific programs.

Section 6.—The President shall visit as many of the component societies of the State Society as possible during the year, in the interest of the Society, actual expenses incurred being paid in accordance with budget determined upon by the House of Delegates.

B. *President-Elect.*

Section 7.—The President-elect shall be an ex-officio member of the House of Delegates and an ex-officio member of the Council. The President-elect shall act for the President in his absence or disability, and shall automatically succeed to the presidency at the end of the term.

Section 8.—The President-elect, at the annual session when he assumes the office of President, shall appoint one member in place of the retiring member on each standing committee and shall name the chairmen of the standing committees for the ensuing year. Announcement of these names shall be made at the general meeting when he assumes office.

C. *Vice-Presidents.*

Section 9.—The Vice-presidents shall assist the President in the discharge of his duties and the Councilors in their districts in the organization of component societies. In event of the death or resignation of the President, a Vice-president, according to rank, shall succeed him for the remainder of his term of office.

D. *Executive Secretary-Treasurer.*

Section 10.—The Executive Secretary-Treasurer of the Society shall be the executive agent of the Society, the secretary of the general meetings, secretary of the House of Delegates, secretary of the Council, and general manager of the official publication of the Society.

Section 11.—The Executive Secretary-Treas-

urer shall be the custodian of all property of the Society, provide for registration of members at general meetings, keep a card index of members, conduct the general correspondence of the Society and, with the consent of the President, employ necessary assistance.

Section 12.—The Executive Secretary-Treasurer shall collect all money due the Society and pay out these funds upon written order of the President, or upon his designated authority. The Executive Secretary-Treasurer shall be bonded as approved by the Council.

Section 13.—The Executive Secretary-Treasurer shall mail notices to members two months before the annual session asking for papers and shall, under the direction of the Publication and Program Committee prepare and send to each member a program of the annual session.

Section 14.—The Executive Secretary-Treasurer shall make a complete yearly report to the House of Delegates, at each annual session.

Article VII—Council

Section 1.—The Council shall consist of the President, President-elect and one member from each Congressional District. The Council shall be the executive and finance committee of the House of Delegates and shall have charge of the business affairs of the Society when the House of Delegates is not in session. The President shall be the chairman of the Council and the Executive Secretary-Treasurer shall be its secretary.

Section 2.—Each councilor shall be the organizer, advisor and censor for his district. A councilor shall visit each component society in his district once a year.

Section 3.—Four members of the Council together with the President or President-elect shall make a quorum. Actual expenses may be paid members attending meetings of the Council in the interim between the annual sessions.

Section 4.—At each annual session, the Council shall present a budget for the next fiscal year, based on the expected income and expenditures during this period, which budget shall be presented to the House of Delegates for its approval.

Section 5.—The Council shall be charged with the duty of organizing the whole state into component societies, and, at each annual session, shall report on this work to the House of Delegates, with recommendations. The Council shall recommend to the House of Delegates the revocation of a charter of a component society when such component society flagrantly violates the rules of the Society.

Section 6.—The Council shall provide offices for the Society headquarters.

Section 7.—The Council shall make diligent efforts to collect past due per capita assessments.

Article VIII—Standing Committees

The Standing Committees of the Society shall be as follows:

1. Scientific Work and Clinics,
2. Legislation and Public Health,
3. Publication and Program,
4. Medical Economics,
5. Medical Education and Hospitals,
6. Membership, and
7. Ethics and Judiciary.

Each of these Committees shall consist of three members and the President, ex-officio. The members of the Standing Committees for the first year shall be appointed for one, two and three years by the President and President-elect, and thereafter the President-elect shall appoint to fill vacancies created by expiration of term of office. No member may serve on more than one standing committee the same year.

All committees shall make reports annually to the House of Delegates. The chairman of all standing or special committees not members of the House of Delegates, shall have the privilege of the floor when reporting to the House or in any incidental discussions.

Actual expenses of members of such committees required to do official work in the interim between annual sessions may be paid upon the recommendation of the chairman of such committees and the endorsement of the president, if presented within thirty days after the meeting, provided budget allowance be made for such purpose in accordance with Art. VII, Section 4.

Scientific Work and Clinics

Section 1.—The Committee on Scientific Work and Clinics shall have charge of the scientific exhibits and clinics for the annual sessions, in co-operation with the President. This committee shall endeavor to stimulate interest in scientific and research work among the members of the Society, and may institute appropriate methods to this end.

Legislation and Public Health

Section 2.—The Committee on Legislation and Public Health shall endeavor to secure and enforce legislation in the interest of public health and scientific medicine. This committee shall co-operate with like committees from the component societies, in accordance with resolutions adopted at Norfolk meeting in 1926.

Publication and Program

Section 3.—The Committee on Publication and Program shall conduct the affairs of the official publication of the Society in accordance with the expressed policy and adopted budget of the Society. Its chairman shall be Editor of the official publication of the Society. This Committee shall also have charge of the preparation of the annual program.

Medical Economics

Section 4.—The Medical Economics Committee shall be the Committee to which are referred all questions of the business relationships of the Society.

The Medical Society of Virginia, upon the adoption of this Constitution and By-Laws, abolishes the Medical Defense Department, except in so far as the common law holds the Society liable for the completion of its obligations, according to conditions set forth in the Article on Medical Defense.

Medical Education and Hospitals

Section 5.—The Committee on Medical Education and Hospitals shall endeavor to bring about co-operation of the Society with the medical schools and hospitals of the State, in order to maintain the best standards in these institutions and thereby assist in the growth and development of medical science in the State.

Membership

Section 6.—The Committee on Membership shall pass upon the applications for membership of those not members of a component society and make recommendations for honorary membership. The Committee shall also, through co-operation with component societies and the Eecutive Secretary-Treasurer, prepare proper obituaries for deceased members.

Ethics and Judiciary

Section 7.—The Commitee on Ethics and Judiciary shall consider all matters involving ethics and conduct of members on appeal from the component societies and may act independently in cases not under the jurisdiction of a component society.

All charges against any member shall be in writing, specifically stated, and signed by the accuser. The individual accused and under investigation shall be entitled to a personal hearing or representation. No charge against a member shall be heard by the Society or the House of Delegates, unless it has first been referred to the Committee on Ethics and Judiciary.

No motion or discussion of expulsion, suspension or other censure of any member shall be allowed unless such member shall have been given two months' notice through the Committee on Ethics and Judiciary. The committee shall make its report to the House of Delegates at the first meeting during the annual session.

No member shall be expelled from the State Society except by a vote of three-fourths of the members of the House of Delegates present. Should the member come forward within twelve months succeeding his or her expulsion and offer satisfactory explanation, he or she may be reinstated, provided three-fourths of those present in the House of Delegates concur.

ARTICLE IX—DUES

Section 1.—There shall be an annual assessment of $5.00 upon each member. These dues for each calendar year shall be made in one payment and are payable before December 31 of each year. Members joining the Society after June the 30, shall be assessed $2.50 for the remainder of that fiscal year.

Section 2.—The Council is charged with the duty of collecting or adjusting past due per capita assessments. A member, whose dues are twelve months in arrears, shall be dropped automatically from the rolls of the Society. For good reason the Council may excuse a member for such delinquency or may reinstate such member upon the payment of all or a part of such past due assessments.

Section 3.—Honorary members or others deserving it, at the discretion of the President, will be exempted from the payment of annual dues. Any member over seventy (70) years of age upon his request may be so exempted by the Executive Secretary-Treasurer.

Section 4.—The fiscal year of the Society

for membership shall correspond with the calendar year.

Article X—Official Publication

The official publication of the Society shall be known as the Virginia Medical Monthly. Publication of the journal shall be under the control of the Publication and Program Committee which shall co-operate in every way with the various committees of the Society for the good of the organization.

Article XI—Ethics

The ethical principles governing the members of the American Medical Association shall govern the Society.

Article XII—Rules of Order

The deliberations of the Society shall be conducted in accordance with parliamentary usage as defined in Roberts Rules of Order.

Article XIII—Amendments

These By-Laws may be amended by a two-thirds vote of the House of Delegates, provided such amendment is proposed in writing and has laid on the table for at least one day. All previous By-Laws of this Society are repealed when these By-Laws are adopted and put into effect.

Article XIV—When in Force

These By-Laws shall be in force upon adoption by the House of Delegates and ratification by a general meeting of the Society.

Explanatory Note as to Medical Defense

The following sections applicable to Medical Defense are in force until all obligations under the common law have been complied with, as the Society on October 17, 1928, voted to eliminate this feature.

Until the above conditions shall have been fulfilled, the Committee on Medical Economics will function in lieu of the Medical Defense Committee named in this Article.

Article on Medical Defense

Section 1.—Active members of the Medical Society of Virginia are entitled, subject to the conditions and limitations hereinafter specified, to aid from the Society in defending themselves against unwarranted claims based on alleged civil malpractice, but with no indemnity.

Section 2.—The Executive Secretary-Treasurer of the Society shall serve as the secretary of this committee and shall supply all needed clerical assistance and shall be custodian of its records.

Section 3.—The medical defense committee or a member thereof designated by the chairman shall investigate all claims based on alleged civil malpractice referred to it by members entitled to the benefits of this by-law. If, after investigation, a claim is believed to be well founded and the interested member so requests, the chairman of the committee shall arrange with the defendant for legal aid in the conduct of the case. The committee, however, shall not assist in the defense of any criminal suit. The committee shall not assist in the defense of any claim if, in its judgment, the member was under the influence of narcotics or intoxicating liquor when the act or default constituting the alleged malpractice occurred. or if it arose out of the commission or attempted commission of any unlawful act by the physician; but the committee may, with the consent of the Council, co-operate with the member in the equitable adjustment of any such claim, having in mind the interests of the medical profession as well as of the offending member.

The medical defense committee shall diligently inquire into the circumstances surrounding each case of alleged civil malpractice coming to its notice.

Section 4.—The medical defense committee is authorized to expend not more than three hundred dollars in the defense of any one claim, which fee shall cover the original trial and any subsequent appeals. In no event can new cases be assumed for medical defense unless there be sufficient funds in the special account to warrant the outlay. The interested member, however, may employ additional counsel of his own choice and at his own expense, and may otherwise contribute to the defense of the case.

Section 5.—The Society shall pay no judgments rendered or compromises effected, nor will it indemnify any member on account of any such judgment or compromise; neither shall it defend any member against any violation of law.

It is earnestly recommended that every member of the Society protect himself with liability insurance which provides the indemnity feature for alleged civil malpractice.

Section 6.—If a member applying to the

medical defense committee for assistance is protected by an insurance policy indemnifying him against loss by reason of alleged civil malpractice, the committee may lend such assistance as in its judgment is advisable.

Section 7.—If the medical defense committee decides that a member who has sought its aid, is not entitled to it, the member may appeal to the Council. The judgment of the Council shall be final.

Section 8.—The Executive Secretary-Treasurer of the Medical Society of Virginia shall segregate one-fifth of each member's annual dues, or proportion thereof, for the purpose of defraying the expenses of the medical defense committee in malpractice suits.

The Executive Secretary-Treasurer shall keep a separate bank account of such funds. The Council may invest such sums as in their opinion are not needed for the checking account.

The medical defense fund shall be disbursed by the Executive Secretary-Treasurer of the Society on vouchers signed by the chairman of the Medical Defense Committee and the President of the Society.

Section 9.—Every active member of the Society in good standing whose dues are paid through December 31 of the preceding year shall be entitled to the benefits of this By-Law.

Non-resident members are not eligible to the benefits of this by-law.

No member shall be entitled to the benefits of this by-law in any case in which the cause of action arose prior to his becoming a member, or prior to the date when medical defense became effective in this Society, or while the member is under suspension or otherwise not in good standing. The estate of a deceased member shall be entitled to the same benefits under this By-Law as the member would be entitled to were he living.

Section 10.—Members entitled to and desiring the assistance of the medical defense committee shall request such assistance in writing, application being made to the Executive Secretary-Treasurer of the Society within thirty (30) days after charges have been preferred.

A member desiring or receiving assistance from the medical defense committee shall, in a written statement, promptly inform the Executive Secretary-Treasurer of all the various alleged facts, court proceedings, if any, and of the termination of the case.

Woman's Auxiliary, Medical Society of Virginia

DOCTOR: PLEASE CALL ATTENTION OF YOUR WIFE TO THIS DEPARTMENT.

Report of Danville Meeting.

The Executive Board of the Woman's Auxiliary to the Medical Society of Virginia met at the home of Mrs. T. W. Edmunds, on October 16, 1928, following a delightful luncheon. This was in preparation for the Sixth Annual Session of the Auxiliary, which convened in the Capitol Theatre at ten o'clock on Wednesday. The President, Mrs. Southgate Leigh, introduced Dr. Seale Harris, of Birmingham, Ala., who told the Auxiliary that they had made a definite place in the community for themselves. He said that the auxiliaries could aid the physicians by educating the public along health lines.

Mrs. T. W. Edmunds extended a hearty welcome to each and every member of the Woman's Auxiliary.

Mrs. J. Allison Hodges, of Richmond, made the response to the address of welcome.

The President introduced Dr. Morris Fishbein, of Chicago, who said that when the women take an interest in the State meetings, the meetings of the men are always successful. He also said that the women must help educate the public along health lines and that they could especially do this in their clubs by expressing how physicians feel on certain matters concerning health. He said that a big problem is to have parents as well informed as the children, who are taught public health in the schools. Two ways of educating the public are through health moving pictures and *Hygeia*. Dr. Fishbein said that the Auxiliary in Virginia has made tremendous strides and he was certain that it would continue its splendid work.

Mrs. Fishbein also made an interesting talk. She said that physicians' wives should be well informed so that they could help educate the public. One of the best ways the wives could do this would be to go to meetings of the Woman's Auxiliary and hear papers on the medical profession. She suggested that Auxiliaries could entertain the Medical Dames, nurses and school teachers. Mrs. Fishbein also suggested that the Auxiliaries should have lectures to which the public would be invited.

The meeting adjourned at twelve-thirty and the Danville Auxiliary gave a luncheon at the Country Club.

The meeting convened at two o'clock. The President, Mrs. Southgate Leigh, introduced the new President, Mrs. F. W. Upshur, of Richmond, who took charge of the meeting. Mrs. Upshur expressed her interest in public health. She said that the aim of the Virginia State Board of Health is complete sanitation in all the counties by 1931. She said that the Auxiliary, although small, can help in this work.

The officers elected for the next two years are as follows:

President: Mrs. F. W. Upshur, 818 W. Franklin St., Richmond, Va.

President-Elect: Mrs. Edwin J. Nixon, 422 Washington St., Petersburg, Va.

Vice-President: Mrs. J. W. Preston, Roanoke, Va.; Mrs. Stuart Michaux, Hampton Hills, Westhampton, Richmond, Va.; Mrs. T. W. Edmunds, Francis Court, Route 4, Danville, Va.; Mrs. M. N. King, 1314 Westover Avenue, Norfolk, Va.

Treasurer: Mrs. William B. Porter, 922 W. Franklin St., Richmond, Va.

Secretary: Mrs. Joseph Bear, 3012 Monument Avenue, Richmond, Va.

Directors: Mrs. Southgate Leigh, 526 Shirley Avenue, Norfolk, Va.; Mrs. J. Allison Hodges, Cary Street Road, Richmond, Va.; Mrs. H. T. Miller, 1510 Webster Avenue, Washington, D. C.

Standing Committees

Health Education.....Mrs. Southgate Leigh
Hygeia.....Mrs. Edwin J. Nixon
Legislative.....Mrs. J. Allison Hodges
Organization.....Mrs. Fletcher Wright
49 S. Market St., Petersburg, Va.
State Editor.....Miss Agnes Edwards
104½ W. Grace St., Richmond, Va.

The Advisory Committee to the State Auxiliary appointed by the Medical Society are Dr. Bolling Jones, Dr. Southgate Leigh, and Dr. J. Allison Hodges.

Dr. J. W. Preston made a talk to the Auxiliary. He said one of the important things the women could do would be to help the physicians get their ideas across to the public. Another way the women can help is to aid rundown mothers. When they have home cares and many small children, it is not medicine that they need.

Courtesy resolutions were drawn up and adopted, and the meeting adjourned.

Proceedings of Societies

The University of Virginia Medical Society

Met October 8, 1928, at the University Hospital, Dr. W. E. Bray, presiding.

At this meeting, the first for the winter 1928-1929, a paper was presented by Dr. Alfred Chanutin, summarizing his experiments and touching upon the literature of the subject of the metabolism of creatin and incidentally of creatinin. Dr. J. C. Flippin presented a paper upon the Therapy of Anemia. Dr. W. B. Porter, visiting from Richmond, gave an interesting report of work going forward at the Medical College of Virginia with extractives of liver in the treatment of pernicious anemia, presenting tables that indicate that the extract has well over 90 per cent of the value of the liver itself. Dr. Porter gave the records of an interesting series of anemia cases, most of which are still under observation. Dr. Powell Williams, visiting from Richmond, presented records of several interesting cases of pernicious anemia with central nervous features. He was able to show improvements in the nervous system features coincident with the use of liver extracts. So remarkable were these improvements that he was tempted to question the accuracy of the general conception that central nervous system tissue is incapable of regeneration.

The second Fall meeting of the University of Virginia Medical Society was on October 22, 1928, at the University Hospital. Dr. W. E. Bray presided.

A paper was presented by Dr. J. B. Graham upon Traumatic Rupture of the Heart with a review of literature and exhibition of a specimen. Dr. H. T. Marshall discussed spontaneous rupture of the heart, on the basis of two cases from the Pathological Service and a specimen of cardiac aneurysm without rupture. Dr. Graham presented a compilation of the admissions, deaths and autopsies at the University Virginia Hospital for a twelve month period, and a similar study from 1923-1928 with graphs, showing the movements in

regard to autopsy permits. Dr. Richard Meade gave a paper illustrated with lantern slide tables upon the after-effects of bilateral oophorectomy. The results of his study were contradictory to a generally accepted notion, he finding little evidence to support the prevailing view that negroes have worse after-effects than whites.

Dr. Vincent Archer showed pictures of a number of anomalous findings by X-ray in the duodenum, chiefly bearing with difficulties in diagnosis and with the significance of diverticula and of dilatation of the first portion of the duodenum.

The next meeting will be on Monday, November 5, at the University Hospital at 7:30.

The Prince Edward County Medical Society

Held a meeting at the time of the meeting of the Central District Society, October 1st, and elected its delegate and alternate to the Danville meeting of the State Society. New members received at that time were Drs. W. A. Brumfield, Ray A. Moore, F. R. Crawford, and H. C. Alexander, all of Farmville. Dr. Thomas G. Hardy was elected president, Dr. J. Weldon Smith, vice-president, and Dr. Susan W. Field, secretary, for the ensuing year. All officers are of Farmville.

Roanoke Academy of Medicine.

The first Fall meeting of the Academy on October the 1st was somewhat in the nature of a jubilee, as at this time Drs. L. G. Pedigo and R. H. Garthright were elected to honorary membership in the Academy and each was presented with a gold watch as evidence of the esteem in which they were held by their fellow practitioners. An original poem on these two doctors was recited by Dr. Geo. M. Maxwell and several speeches made. Following the meeting refreshments were served.

At the election of officers held at this meeting, Dr. George B. Lawson was elected president; Drs. J. D. Willis and George S. Hurt, vice-presidents; and Dr. Charles A. Young, secretary-treasurer. All officers are of Roanoke.

The Nelson County Medical Society,

At its last meeting, besides electing delegate and alternate to the State Society meeting, elected Dr. J. B. Woodson, Lowesville, State senator for Amherst and Nelson Counties, president, and Dr. E. C. Kidd, Lovingston, secretary-treasurer.

The Truth About Medicine

In addition to the articles enumerated in our letter of August 25th, the following have been accepted:

Abbott Laboratories
- Ampoules Metaphen Solution 1:1,000, 10 c.c..

Eli Lilly & Co.
- Erysipelas Streptococcus Antitoxin (Lederle) Refined and Concentrated
- Tetanus Antitoxin, 20,000 units

H. K. Mulford Co.
- Diphtheria Toxin for the Schick Test, two 10 c.c. vial packages.

Parke, Davis & Co.
- Tetanus Antitoxin Globulin, 20,000 units

E. R. Squibb & Sons
- Diphtheria Toxin-Antitoxin Mixture (Sheep)—Squibb
- Diphtheria Toxoid—Squibb.
- Parathyroid Hormone—Squibb

United States Standard Products Co.
- Diphtheria Toxin-Antitoxin Mixture 0.1 L + (Non-Sensitizing)

NEW AND NONOFFICIAL REMEDIES

Ephedrine Hydrochloride—Squibb.—A brand of ephedrine hydrochloride—N. N. R. (New and Nonofficial Remedies, 1928, p. 175). E. R. Squibb & Sons, New York.

Syrup Ephedrine Hydrochloride—Swan-Myers.—A syrup containing ephedrine hydrochloride—Swan-Myers (New and Nonofficial Remedies, 1928, p. 176) 0.295 Gm., in 100 c.c. (⅛ grain per fluidrachm) and alcohol 12 per cent. Swan-Myers Co., Indianapolis.

Potassium Bismuth Tartrate with Butyn—D. R. L., 20 c.c.—Each c.c. contains potassium bismuth tartrate—D. R. L. (New and Nonofficial Remedies, 1928, p. 110) 0.1 Gm.; butyn, 0.6 per cent; and metaphen, 0.01 per cent suspended in expressed oil of almonds. Abbott Laboratories, North Chicago.

Scarlet Fever Streptococcus Toxin for Skin Test—P. D. & Co.—It is prepared by the method of Drs. Dick by license of the Scarlet Fever Committee, Inc. (New and Nonofficial Remedies, 1928, p. 392). It is marketed in single 1 c.c. vial packages, containing sufficient toxin for ten tests. Parke, Davis & Co., Detroit. (Jour. A. M. A., September 1, 1928, p. 645).

Ampoules Metaphen Solution 1:1,000, 10 c.c.—1 part metaphen (New and Nonofficial Remedies, 1928, p. 274) dissolved in 1,000 parts of water by means of sodium hydroxide (four molecules of NaOH for every molecule of metaphen). Abbott Laboratories, North Chicago.

Erysipelas Streptococcus Antitoxin (Lederle) Refined and Concentrated.—An erysipelas streptococcus antitoxin (New and Nonofficial Remedies, 1928, p. 353) prepared by immunizing horses by subcutaneous injections of the toxic filtrate obtained from broth cultures of the erysipelas streptococcus, or by intravenous injection of cultures of the erysipelas streptococcus obtained from typical cases of erysipelas. It is marketed in packages of one syringe containing one basic dose. Lederle Antitoxin Laboratories, New York.

Diphtheria Toxoid—Squibb.—A diphtheria toxoid (Jour. A. M. A., August 4, 1928, p. 321) prepared from diphtheria toxin by treatment with formaldehyde as prescribed by the U. S. Public Health Service to secure detoxification. It is marketed in packages of one immunization treatment containing one 1 c.c. ampule of diluted diphtheria toxin for the reaction test and two 1 c.c. ampules of diphtheria toxoid for

treatment. E. R. Squibb & Sons, New York. (Jour. A. M. A., September 22, 1928, p. 883).

PROPAGANDA FOR REFORM

The Anterior Lobe of the Hypophysis.—In 1921, Evans and Long demonstrated specific endocrine effects, such as gigantism and sex disturbance from parenteral dosage of mammals with beef anterior hypophysis after failure in a long series of massive oral administrations. Putnam, Teel and Benedict have prepared a sterilized extract of the anterior lobe of the hypophysis that has been used in animals with the production of changes which appear to be specific. It serves to repair some and perhaps all of the disabilities produced by hypophysectomy. The extract has been used in one human case of pituitary insufficiency, apparently with temporary benefit. (Jour. A. M. A., June 2, 1928, p. 1791).

Iron in the Treatment of Anemia.—In most cases of nutritional anemia and secondary anemia, and more or less in primary anemia, the administration of iron is of benefit. The administration of iron intravenously or subcutaneously is rarely necessary or desirable. Recent experiments with rats confirm previous work, that small doses of iron are sufficient to case improvement. In a recent investigation it was found that the best hemoglobin improvement was caused by administering ferric acetate, ferric albuminate, ferric chloride and ferric citrate. (Jour. A. M. A., June 2, 1928, p. 1792).

Alucol Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Alucol, marketed by The Wander Co , Chicago, is stated to be colloidal aluminum hydroxide to be used therapeutically as an antacid. The Wander Co. was informed that the Council would accept Alucol (a) if marketed in the United States under a descriptive name, such as colloidal aluminum hydroxide, with definite standards of identity and uniformity that shall be found acceptable; (b) if acceptable evidence is offered to show that the use of the product does not produce harmful effects, and (c) if the therapeutic claims are based only on its protective action on the gastric mucosa and on its moderate reduction of gastric acidity. It was also stipulated that the claims should not (unless acceptable evidence is offered to the contrary) imply that while it reduces acidity it does not retard gastric digestion, and shall omit the unsupported statements concerning the harmfulness of sodium bicarbonate, magnesium oxide and other alkalis currently used in the treatment of hyperacidity. The product was not made acceptable and hence the Council rejected Alucol and publishes its report for the information of the medical profession. (Jour. A. M. A., June 9, 1928, p. 1871).

Lens Extract (Mulford) Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Lens Extract, marketed by the H. K. Mulford Co., is stated to be "A sterile solution of the protein from the eye lens of cattle, standardized to contain 2 per cent protein with 0.5 per cent phenol added as a preservative." The product is based on the work of Dr. A. Edward Davis and has been under consideration by the Council since 1924. A review of the available evidence and the advice of the Council's consultants indicated that not only is there no evidence that the substance is beneficial but that, being useless, the employment of lens extract in the treatment of cataracts is likely to result indirectly in harm to the patient suffering from the disease: The Council therefore declared Lens Extract (Mulford) unacceptable for New and Non-official Remedies. (Jour. A. M. A., June 9, 1928, p. 1871).

Copper in Nutrition.—The announcement made by a group of biochemical investigators from the University of Wisconsin regarding the function of copper as a supplement to iron for hemoglobin formation under certain conditions, has created much interest. It is important to sound a warning against generalizations on the basis of these observations, for already copper is beginning to be lauded by uncritical and unscrupulous persons as a cure-all for the entire gamut of the widely different anemias. It was shown that a trace of copper supplied along with iron salts eliminated the anemia hazard from experimental diets fed to rats. Thus, copper appears to be a factor in the building of hemoglobin. For the present it is futile to speculate on the function of copper in nutrition. The most that can be asserted at this time is that we may need to reckon with traces of copper in some of the most fundamental reactions of the organism. (Jour. A. M. A , June 9, 1928, p. 1872).

Standardization of Ephedrine Preparations.—The A. M. A. Chemical Laboratory, in cooperation with the Council on Pharmacy and Chemistry, has been in considerable measure instrumental in arriving at the highly satisfactory condition that exists with regard to the market supply of this drug in America. The Laboratory studied the problem carefully and tests and standards were elaborated at the time when ephedrine and its compounds were just becoming popular. The standardization of new remedies is one of the most important functions of the Laboratory. Unless the products are standardized, comparable clinical investigations cannot be reported. The first step in the investigation by a therapist of a new remedy is the determination of its chemical composition and purity. (Jour. A. M. A., June 9, 1928, p 1873).

Transkutan.—"Transkutan" is marketed in the United States and Canada by Transkutan, Inc., New York City. It is a German product, which comes in bottles holding about four and one-half ounces with a gaudy label in German. The method of introducing this German product to the American market is ingenious. While physicians are detailed, newspaper advertising addressed to rheumatic sufferers is also used. Transkutan is claimed to have produced remarkable results in the treatment of influenza, rheumatoid arthritis, neuritis, sciatica and other conditions. The composition of Transkutan is secret. The method of using Transkutan is about as theatrical as the method of its exploitation. The patient gets into a hot bath and the entire contents of a $5 bottle of Transkutan is poured on the surface of the water. Since examination of Transkutan in the A. M. A. Chemical Laboratory shows that the preparation is essentially a mixture of turpentine and a concentrated solution of calcium and magnesium chlorides, a thin film of turpentine covers the surface of the bath. When the patient is taken from the bath the film of turpentine will cover the body. He is then wrapped in a blanket without drying or rubbing, placed in a bed, and allowed to sweat. It is obvious that the so-called Transkutan treatment is, for all intents and purposes, nothing but a theatrical variant of a turpentine stupe. (Jour. A M. A., June 9, 1928, p. 1889).

Ovaltine.—According to the manufacturers, Ovaltine "is a concentration of the nutritive constituents of malt, milk and eggs, flavored with cocoa." In other words, the product is essentially a chocolate-flavored

malted milk to which has been added a small amount of dried egg substance. The company gives the following chemical composition of Ovaltine: "Protein, 14.2 per cent; Fat, 8.01 per cent; Carbohydrates, 67.9 per cent; Ash, 3.76 per cent; Organic Phosphorus . . . 1.18 per cent." According to the manufacturers this "new pick-up drink from Switzerland" originated in Berne over thirty years ago. Two heaping teaspoonfuls of Ovaltine would produce about 50 calories. A glass of milk has an energy value of 170 calories. The power of inducing sleep, which is stressed in the advertising, is similar to that of other warm drinks taken just before retiring. (Jour. A. M. A, June 16, 1928, p. 1968).

Metrazol ("Cardiazol").—In a preliminary report the Council on Pharmacy and Chemistry states that under the name "Cardiazol" a German product has been marketed by E. Bilhuber, Inc., New York, with the claim that it has actions similar to camphor as "An Emergency Stimulant and Regulatory Agent for the Heart." The Council reports that the name "Cardiazol" was found unacceptable because it is therapeutically suggestive, but that the name Metrazol—a contraction of the chemical name, pentamethylentetrazol—would be considered acceptable. An experienced worker in this field who investigated "Cardiazol" for the Council found that the product was a very uncertain respiratory stimulant in conditions of depressed respiration in which carbon dioxide, epinephrine and ephedrine were markedly effective. The Council reports that the pharmacologic studies and clinical trials carried out by this investigator do not give warrant to the enthusiastic recommendations which are found in the published literature and that there is no really satisfactory or conclusive evidence that the substance is an effective and useful stimulant of the mammalian heart. The Council postponed definite action on the product to await confirmatory evidence. (Jour. A. M. A., June 23, 1928, p. 2019).

Iodine Compounds and the Thyroid.—Experiments have been made recently to determine quantitatively the rates at which the hyperplastic thyroid gland of the dog selectively absorbs various iodine compounds. From this study it may be concluded that in practice iodide iodine is of chief pharmacologic significance in altering thyroid secretion. There appears to be little experimental basis for the use of free iodine, even if loosely linked with iodides, as in compound solution of iodine, in the treatment of patients with various types of goiter. (Jour. A. M. A., June 23, 1928, p. 2024).

Liver Extract No. 343.—The Council publishes a report of the Committee on Pernicious Anemia of the Harvard Medical School on Liver Extract No. 343. The report outlines the work of the committee in developing a potent liver extract for use in pernicious anemia and the studies carried out with the product of Eli Lilly and Co., which was eventually accepted for New and Non-official Remedies and placed on the market. Subsequently the committee found that certain lots of this product were weaker than the product manufactured for five months previously. Eli Lilly and Co. collaborated with the committee by withdrawing so far as possible this material from distribution. Recent tests have demonstrated that material of standard strength has again been produced and the committee believes that Eli Lilly and Co. can now recommence distribution of the standard product on a commercial scale. (Jour. A. M. A., June 30, 1928, p. 2102).

The Danger of Irradiated Ergosterol.—The experiments of Windaus, Hess and others established the fact that vitamin D is created in ergosterol by exposure to ultraviolet rays. Irradiated ergosterol preparations have been placed on the market but none have been accepted by the Council on Pharmacy and Chemistry. They are offered for use in the prevention of rickets, tetany and osteomalacia, as well as for other real or fancied powers assumed to be associated with vitamin D. Steenbock's researches on the irradiation of foods have shown the possibilities of securing the rickets-preventing factor by the dietary route and manufacturers of foods and the associated advertising agencies now plan to increase the salable qualities of articles of diet with claims for the vitamin D created in the food products. Some pediatricians have viewed with alarm the possibility that too much vitamin D will thus become available to the public in its diet. That the alarm is not without foundation is indicated by a review of researches just completed in Germany, showing that overdoses of vitamin D may have serious effects. A warning is warranted against too great exposure to ultraviolet rays, against too great an intake of vitamin D, A, B or any other vitamins. The public sale and widespread use of such products should await careful clinical tests under controlled conditions. (Jour. A. M. A., June 30, 1928, p. 2105).

Dangers of Large Doses of Acetylsalicylic Acid.—If large doses of acetylsalicylic acid are to be administered, the urine would have to be watched for evidence of kidney irritation, as albuminuria, hematuria and even actual nephritis may be produced. If albuminuria is present previous to the administration, an increase in the nonprotein blood nitrogen and a lessening in the phenolsulphonphthalein output must be guarded against. Any form of skin eruption, itching, or any degree of gastric irritation would call for reconsideration of such dosage. Also tinnitus and other impairment of nerve function needs to be looked for. (Jour. A. M. A., August 4, 1928, p. 344).

Convalescent Serum in Epidemic Poliomyelitis.—The main indication for treatment in this disease is the prevention of paralysis, which is due to the action of the poliomyelitic virus on the nerve cells that preside over movement and nutrition of voluntary muscles. Fortunately there is a period in the evolution of the attack of poliomyelitis during which it may be possible to neutralize the virus before it can develop its maximum destructive effects on the motor nerve cells. There seems to be no question that poliomyelitis can be recognized in this stage. The results obtained from intraspinal and intravenous injections of convalescent serum are encouraging. Theoretical considerations and the results of careful observation appear to justify fully the further trial of convalescent serum in preparalytic poliomyelitis. (Jour. A. M. A., August 11, 1928, p. 398).

Causyth for Rheumatism.—An article in an Austrian medical journal reports the use of "Causyth." No definite statement in regard to the composition of Causyth is contained in the article. The product is vaguely described as "zyklohexatrikupyridin sulfonsaures Pyrazolderivat." A note on the use of Causyth in grippe has also appeared in a German medical journal. The product does not appear to be marketed in the United States and no firm has requested its consideration by the Council on Pharmacy and Chemistry. (Jour. A. M. A., August 11, 1928, p. 418).

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Editorial

Reflections on "Diabetic Treatment."

Treatment of diabetes, within the past ten years, has been brought out into the open. Much of what was formerly unknown and confused about dietary management of diabetics has become commonly known and insulin administration has added greatly to our knowledge of the treatment. In an age of "over-eating" and of a lack of physical exercise, with resultant obesity, not to cite gall-bladder, gall tract infections, and other focal infections that may destroy or obtund pancreatic function, diabetes, in this country, if recent statistics and common experience can be relied upon, remains one of the big medical problems of our time and creates an incidence of disease which challenges the knowledge of dietetics and insulin administration of a nation-wide number of physicians. Every practitioner doubtless will agree to the statement, that the occurrence of diabetes is more frequent in his routine work today than it was five and ten years ago. So it is with a cross current of reflections that one congratulates one's self upon a certain sense of clinical mastery over a disease which appears to be more and more frequently presenting itself for treatment. One need hardly take time to attempt to give facts in evidence of this increased incidence, but may profitably review the armamentarium at hand for the successful abridgment of the baneful symptoms and complications; for the reduction of the grave case to a milder type; for the prolongation of the diabetic life span, and for the rescue of dramatically ill cases from diabetic coma.

Diet Control

There has been much confusion about diet in treatment of diabetes. Fads in diet have come and gone. Experimental diets of one sort and another have been tried and much has been learned. It seems now that the trend of agreement for diabetic cases is back to the simple formulas of the early days of this decade. This does not mean that utmost care is not now deemed necessary, this does not mean that essential knowledge of values of food, physiologic knowledge of dietary values, correlation of food elements and calculation of total caloric values are not needed. On the contrary, modern medicine requires thorough acquaintance with this phase of diabetic treatment. Medical opinion of today agrees that dietary control in diabetes is the simplest, surest and most scientific way of treatment. The adjustment of daily food intake to meet the requirements of metabolism (body weight and strength), in properly balanced proportions of carbohydrate, protein and fat, as each case may require, is a fundamental procedure for bringing to the diabetic safety from loss in body-power and for securing a fair state of well being and prolongation of life. The problem of making a food adjustment or program is individual. Each patient demands a special survey. Each diabetic suffers definite pancreatic damage. Each diabetic possesses a personal abridgment in "insulin" output from a damaged pancreas. Each patient has a special associated or complicating state of pathology elsewhere. These individualizations of pathology and misfunction require searching study before food prescriptions and formulae may finally be set for daily adoption and use.

Probably in no disease is there more urgent need for a search for and eradication of focal infections. Each diabetic demands of the physician in charge careful investigation into every possible focus of infection. Often the gall-bladder and gall tract provoke an aggravation of the symptoms of diabetes; this focal infection alone may control the destiny of the patient. Decisions of what to do with a gall-tract-infection may have important or crucial effect upon the internal secretion of the damaged pancreas. Operation for the removal of this focal infection, after careful preoperative

care of the diabetic, may be the best thing to do, but it may not in some cases, because of the age of the patient and chronicity of the disease. This and other questions of clinical judgment demand of the physician keen judgment, if the welfare of the patient is ever the uppermost consideration, as it should be. Nowhere does the "golden rule" philosophy of medical advice enter practice more truly than in the decisions one has to make in advising necessary surgical operations and in no condition of pathology is surgery called upon to be applied with greater caution than in diabetes-mellitus-pathology.

Carbohydrate

This is the keystone in diet of the diabetic. The arch of diabetic health is no stronger than the strength of the carbohydrate tolerance or carbohydrate metabolism. In the past ten years, extreme variations of experimental nature in carbohydrate feeding have been practiced by various schools of thought and by various diabetic specialists. The range has been from practical elimination of carbohydrates in some "cures," to the exclusive carbohydrate ration as represented in the oatmeal or potato cure. More recently, even, an agreement of treatment assures a careful study of carbohydrate capacity and, with the use of insulin as demanded, the diabetic patient may be fitted with that allowance of carbohydrate that will meet the needs of bodily strength and weight as combustion of it affords the necessary physiology factors in the utilization of companion elements of all diets for man; protein and fat.

If insulin administration can be avoided or deferred with safety, physicians agree that it should be done. In some cases a temporary use of insulin and an increased carbohydrate prescription, beyond the carbohydrate tolerance is permitted for the purpose of bringing about a state of better function in the body organs. Forced carbohydrate combustion, with increased carbohydrate administration and adequate insulin to meet the same, often brings salutary improvement, quickly.

Fat

At once a most important and useful element of caloric value in diabetic diet, fat feeding may be most harmful and dangerous. The high fat diets of the recent past are today suffering serious criticism. Fat is needed, but must be regulated and carefully prescribed. The prescription of fat fits into the picture only after the carbohydrate and protein have been placed in the background.

Protein

Protein, while the subject of much dispute in the past, has now taken an accepted position in diabetic diet. The contentions as stated by Allen, concerning protein feeding, have fallen in line with the plan of supplying to the diabetic, non-nephritic, about 2/3 gram of protein per kilogram of body weight. Variations of this may be needed to meet special situations. It may easily be raised to a higher figure for a time in some cases, in order to vary the carbohydrate factors of the diet, without loss of bodily strength or vigor.

Insulin

After seven years, practitioners may look upon insulin administration to diabetics with a feeling of greater confidence, both as to the efficacy of the agent, and as to the management of the malignant manifestations of this baneful disease.

It is fairly well agreed that insulin should be avoided, if dietary management of the disease can be satisfactorily achieved. In fat patients, dietary adjustment with a view of utilization of the deposit fat and training of the patient in the "lean-diet" of moderate undernourishment, affords one a method of controlling the disease. Diabetic deaths have been fewer by far since insulin has been given. In this phase of the therapeutic management, insulin is the master remedy. In diabetic coma, in emergency surgical risks of diabetic patients, insulin administration, properly applied by one experienced in its use, has been a boon to these cases. There also are borderline cases of diabetes, which may need courses of insulin treatment or an occasional dosage of insulin. Cases of hypertension and nephritis with cardiac disturbances, may be given a short course of insulin and dietary restriction to much advantage with a prolongation of the span of life. The use of insulin has numerous applications and serves a signal service to diabetics, but in no group of cases of diabetes does it perform more valuable service than in

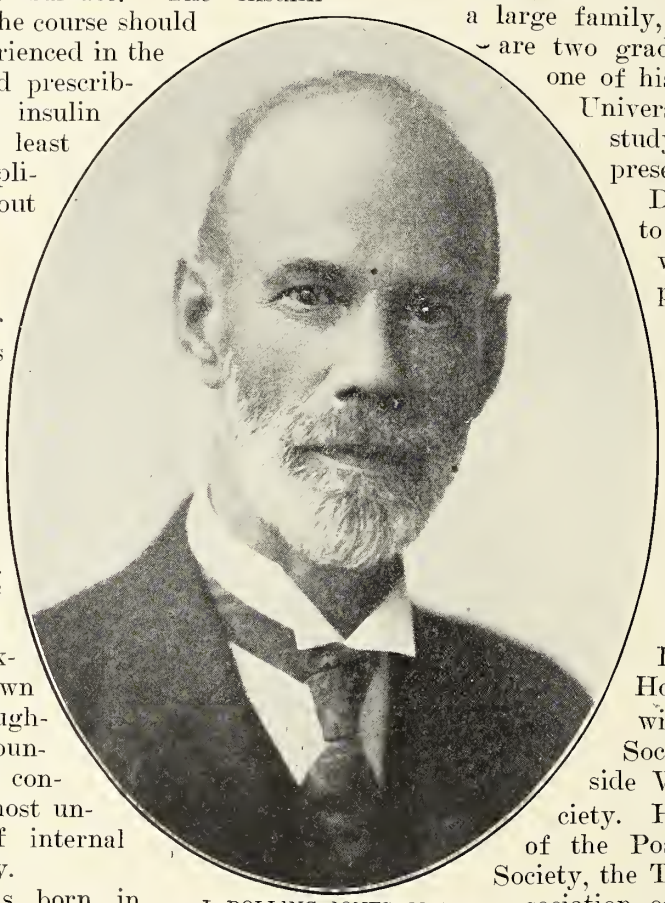
the juvenile group of cases. Here it is almost indispensable, although extreme care and caution are required in its proper use in these highly risky cases.

Complications of Acidosis, Infection and Gangrene

In this phase of the disease, experienced pilots are needed. Here the margin of safety is very narrow and the hidden rocks of disaster lie near the surface. The insulin dietary plotting of the course should be done by one experienced in the management of food prescribing calculation and insulin administration; at least until dangerous complications are well out of the way.

Our President.

The highest honor that the physicians of Virginia can confer upon a fellow-practitioner is the presidency of the Medical Society of Virginia and in the selection of Dr. J. Bolling Jones, of Petersburg, we have a leader that is exceptionally well known to physicians throughout this part of the country and one who is conceded to possess a most unusual knowledge of internal medicine and surgery.



J. BOLLING JONES, M. D.,
President, Medical Society of Virginia.

Doctor Jones was born in Dinwiddie County, Va., February 27, 1871. He came from very old American stock. His father was Reverend Thomas Thweatt Jones and his mother was Margaret Anne Bolling, both of Southside Virginia.

Doctor Jones received his early education at Sunnyside School, Dinwiddie County, and later at Mount Hermon School in Massachusetts. He graduated in medicine at the Medical College of Ohio, now the Medical Department of the University of Cincinnati, in 1893.

After graduation, Dr. Jones served as resident physician at Good Samaritan Hospital, Cincinnati.

In 1894 Dr. Jones passed the State Board of Medical Examiners of the State of Virginia and joined the Medical Society of Virginia. The same year he located in Chesterfield County where he practiced general medicine for three years. During this time he was a member of the County Board of Health.

On July 7, 1896, Dr. Jones married Miss Janie Duckett, of Clinton, S. C. They have a large family, among the children are two graduate physicians and one of his daughters is at the University of Virginia studying medicine at the present time.

Doctor Jones moved to Petersburg in 1897 where he has been practicing internal medicine and surgery since that time.

A number of societies in this section have honored Dr. Jones by electing him as their presiding officer. He is a member and ex-president of the Petersburg Medical Faculty, Petersburg Hospital Staff, the Dinwiddie County Medical Society and the Southside Virginia Medical Society. He is also a member of the Post-Graduate Medical Society, the Tri-State Medical Association of the Carolinas and Virginia, the Southern Medical Association and the American Medical Association.

During the war, Dr. Jones served as a member of the Medical Advisory Board of Petersburg. For eight years he was a member of the Medical Examining Board of the State of Virginia and for almost twenty years he has been a member of the Legislative Committee of the Medical Society of Virginia where he has accomplished more for the Society than in any other capacity.

There is no question about the fact that our

Society is very fortunate in electing Dr. Jones as its leader for the coming year, for his stand for progressive medicine will bring a spirit of enthusiasm to all with whom he comes in contact.

W. C.

News Notes

The Danville Meeting

Of the Medical Society of Virginia is now a pleasant memory for those who were fortunate enough to be guests of the Pittsylvania County-Danville Medical Society on October 16, 17 and 18. Dr. J. W. Preston, Roanoke, was the presiding officer and had as his invited guests Dr. Dean Lewis, of Baltimore, Dr. Seale Harris, of Birmingham, Ala., Dr. E. Starr Judd, of Rochester, Minn., and Dr. Morris Fishbein, editor of the *Journal of the American Medical Association,* Chicago. Addresses of all these men were of more than passing interest. There was an attendance of 336 doctors, more than a hundred ladies, and a number of exhibitors. There were more scientific exhibits this year than at any previous meeting, showing that they are gaining in favor. An innovation was the clinics held on the afternoon of the opening day. Several affiliated societies held luncheon meetings during the time of the annual sessions. The entertainments provided for members and the ladies with them were attractive and most enjoyable, culminating in the reception and dance at the golf club on the second evening. Great credit is due to Dr. I. C. Harrison, chairman, and his able assistants—all the members of the county society—for the splendid arrangements which were made for the comfort and pleasure of their guests.

The principal business engaging the attention of the House of Delegates was a consideration of the revision of the Constitution and By-Laws. These are printed in this issue with revision and amendments adopted and it is recommended that all members read them with an idea of acquainting themselves with the rules which govern our organization. Perhaps the most outstanding action of the House of Delegates was its decision to abolish the medical defense feature which it has been giving members for several years. Many matters pertaining to the good of the profession were discussed in the various reports presented, which show that the Society is continually broadening the scope of its work.

Full minutes of the House of Delegates and the general meetings appear in this issue, together with reports made by all committees.

Dr. J. Bolling Jones, Petersburg, succeeded to the presidency, and Dr. Charles R. Grandy, of Norfolk, was elected president-elect.

Virginia Pediatric Society.

The third annual meeting of the Virginia Pediatric Society was held at a luncheon in the Hotel Burton, Danville, Va., on October 17, 1928.

There were about twenty members of the organization present at this meeting. A very interesting report was read by Dr. Basil B. Jones, chairman of the Child Welfare Committee of the State Pediatric Society. This report will be given in detail in a later issue of this journal. Dr. L. T. Royster, of the University of Virginia, gave an interesting and stimulating address, which will also appear later. Dr. Harvey Coghill, of Richmond, read an interesting paper on "Behavior Problems in Children."

Several new members were elected to the Society, and the following officers were installed for the ensuing year: Dr. Chas. E. Conrad, Harrisonburg, president; Dr. Franklin D. Wilson, Norfolk, vice-president, and Dr. Wm. B. McIlwaine, Petersburg, secretary-treasurer.

Virginia Venereal Disease Society.

There was organized on October 17, during the annual meeting of the State Society, in Danville, Va., the Virginia Venereal Disease Society. The purpose of this association is to promote all medical and popular measures for preventing the venereal diseases. The following officers were elected: Dr. R. W. Garnett, Danville, president; Dr. T. Latane Driscoll, Richmond, vice-president, and Dr. D. C. Smith, Charlottesville, secretary.

Dr. Walter Clarke, of the American Social Hygiene Association, presented a very interesting film on "The Diagnosis and Treatment of Syphilis."

Virginia Roentgen Ray Club.

The annual meeting of the Virginia Roentgen Ray Club was held at Hotel Danville, Danville, Va., October 17th, during the meeting of the Medical Society of Virginia. A

very delightful lunch was served at this hour and there was a round table discussion which proved highly entertaining and beneficial to all.

Doctor Clayton W. Eley, of St. Vincent's Hospital, Norfolk, was elected to membership.

Doctor A. L. Gray, Richmond, was elected president and Doctor Wright Clarkson, Petersburg, secretary.

The Virginia Hospital Association

Held its annual meeting in Danville, Va., October 16th, first day of the meeting of the State Society. Interesting papers were presented by the president, and by Dr. J. T. Burrus, High Point, N. C.; Dr. John Bell Williams, Richmond, and Dr. J. E. Harris, Winchester. Dr. J. M. Shackelford, Martinsville, was re-elected president, and Dr. John O. Boyd, Roanoke, secretary-treasurer.

News of Women Physicians.

Dr. Margaret Kuyk, of Richmond, has been appointed chairman of Public Welfare of the Virginia Federation of Women's Clubs.

Dr. Mary B. Baughman, of Richmond, has been appointed chairman on Public Health of the Virginia Federation of Women's Clubs. Dr. Baughman has suggested the Venereal Disease Problem as the topic for study of the various Club sections interested in Public Health and she will be very glad to receive the names of medical men and women who will be willing to speak to the Clubs in their part of the State or elsewhere. Address, 611 Medical Arts Building, Richmond, Va.

Dr. Louise Ingersoll is going to look after the women physicians who attend the S. M. A. Convention in Asheville, North Carolina, which will be November 12th-15th, inclusive. She has planned a dinner for them at the Country Club at 6:00 P. M., on November 13th. All medical women who expect to attend are requested, to notify her, giving, if possible, their prospective hotel addresses. Further information will be obtainable at the Bureau of Information. Address: Dr. Louise M. Ingersoll, 226 Haywood Building, Asheville, N. C.

Dr. Gladys Smithwick, M. C. V., has located at Oakdale, Iowa.

Dr. Edith Lacy, M. C. V., 1925, is still in residence at 45 Sossoon Road, Podah, India. Her classmates are urged to send her a card of Christmas greeting. Write immediately.

Marker Placed Over Grave of Continental Physician.

On October the 14th, a monument to Dr. James Craik, chief physician and surgeon of the Continental Army, was unveiled with appriate exercises in the graveyard of the old Presbyterian Meeting House in Alexandria, Va. Speakers at this service included Major-General Ireland, surgeon-general of the U. S. Army and Representative R. Walton Moore, of Virginia.

Dr. Craik died in 1814 at the age of eighty-four years, and his grave had been unmarked to this time. It is said that he probably enjoyed the most intimate friendship of all men with General George Washington, who referred to him in his will as "My old and intimate friend, Dr. Craik."

American College of Surgeons.

At the Clinical Congress of the American College of Surgeons held in Boston,, Mass. early in October, Drs. Linwood D. Keyser, Roanoke, H. Grant Preston, Harrisonburg, and Emanuel Wallerstein, Richmod, were the Virginia surgeons admitted to fellowship. Dr. Franklin H. Martin, Chicago, is president of the College for the term expiring with the annual meeting in 1929. At the Boston meeting, the following officers were elected: President-elect, Dr. Merritte W. Ireland, Surgeon-General, U. S. Army, Washington, D. C.; vice-presidents, Dr. William W. Pearson, Des Moines, Iowa, and Dr. Perry G. Goldsmith, Toronto, Ontario; regents for term expiring 1931, Drs. John M. T. Finney, Baltimore; Charles H. Mayo, Rochester, Minn.; R. E. McKechnie, Vancouver, B. C.: Ernst A. Sommer, Portland, Ore.; and J. Bentley Squier, New York.

The next annual meeting of the Clinical Congress and of the American College of Surgeons will be held in Chicago, October 14-18, 1929.

Married.

Dr. S. R. Jordan, formerly of Virgilina, Va., but now located in North Carolina, and Mrs. Annie Belle Fields, of Greensboro, N. C., recently.

Dr. Otis N. Shelton, of Blue Ridge Sanatorium, Charlottesville, Va., and Miss Ruth Blackwell, of Roanoke, Va., September 26.

Dr. Alpheus Hartley Wood, Emporia, Va.,

of the class of '27, Medical College of Virginia, and Miss Madge Moline Kessler, New Castle, Va., October 8.

Dr. James Morehead Whitfield, Jr., Richmond, and Miss Charlotte Gibbs, Woodstock, Va., November 7.

Dr. Ernest D. Davis, Jr., formerly of Standardsville, Va., now in the Mdeical Corps of the U. S. Navy, Washington, D. C., and Miss Harriet Clarke, Covington, Va., early in October. Dr. Davis is a member of the class of '27, University of Virginia, Department of Medicine.

Tokyo Has Adopted the Habit Clinic.

Children who "graduate" from the well-baby clinic which was started a year ago for babies born in St. Luke's International Hospital in Tokyo will now have the advantage of the habit clinic which the hospital has just organized for their special benefit. Classes will be held for mothers in the training and physical care of their children of preschool age. The roll of the well-baby clinic now numbers over 600 babies. A Japanese woman graduate of the University of Michigan, who for six years was assistant professor in the department of pediatrics of its college of medicine, has charge of the well-baby clinic. The supervisor of the field work is a graduate of the Peter Bent Brigham Hospital, Boston.

Dr. Watts Entertained.

Dr. Stephen H. Watts who has been for more than twenty years Professor of Surgery at the University of Virginia, has resigned and retired from the active practice of his specialty. On October 2, 1928, at the Monticello Hotel, Charlottesville, Va., the Albemarle County Medical Society gave a banquet in his honor. Dr. R. L. Page, of Batesville, Va., was the chief speaker of the evening. Dr. T. H. Daniel, of Charlottesville, on behalf of the Society, presented Dr. Watts a Life Membership in the form of a handsomely framed certificate. Other physicians, voicing their regret at Dr. Watts' retirement, and discussing the splendid work that he has done and the high esteem in which he is held by the Society, were: Drs. J. C. Flippin, H. T. Marshall, H. S. Hedges, and J. H. Neff.

Dr. William B. Porter,

Professor of Medicine, Medical College of Virginia, Richmond, made a report before the Medical Society of the University of Virginia on October 8, on the special work being done in the college hospitals on pernicious anemia.

Reduction in Puerperal Deaths in Virginia.

According to statement issued by the Bureau of Vital Statistics, there was a marked reduction during 1927 in the number of puerperal deaths in Virginia—the lowest number of such deaths being reached of any year since the Bureau's first report for 1913. In 1927 there were 364 deaths attributable to childbirth, or 97 less than the year before. The white eclamptic rate is slightly lower per 1,000 than the colored, which is perhaps due to the fact that white women receive more prenatal and obstetric care, guarding specially against damage to the kidneys.

Dr. and Mrs. George P. McCoy

And daughters, Mary Hille and Elizabeth, returned to their home in Hopewell, Va., about the middle of October, after spending six weeks at Monterey, Va.

State Department of Health Offers Three Prizes.

The State Department of Health has adopted the slogan "Virginia—The First State to be Sanitated". To accomplish this end, the Department offers a prize of $500.00 to the county in Virginia that shows the highest percentage of homes sanitated between June, 1928, and June, 1931; a prize of $300.00 to the next highest; and $200.00 to the third highest. These prizes will go to the organization in each of the wining counties instrumental in securing the highest percentage of homes sanitated.

Eight Lepers Released as Apparently Cured.

The Public Health Service has recently authorized the probational release of eight lepers from the National Leprosarium at Carville, La., as no longer a menace to the public health. These eight lepers have been under treatment at the National Leper Home for varying lengths of time, ranging from two years to seven years. It is of interest to know that leprosy, the dread disease of the centuries, is beginning to be conquered by improved modern scientific medical treatment.

The National Leprosarium at Carville, La., has been operated by the U. S. Public Health Service for a little more than seven years. During that time thirty-seven lepers have been released or paroled as being no longer danger-

ous to the public health. Only one of these lepers has suffered a relapse and has had to resume treatment. More than 300 lepers are now under treatment at this institution.

Dr. William F. Drewry,

City manager of Petersburg, Va., was elected to the office of first vice-president of the Virginia League of Municipalities, which met in Newport News the middle of October.

Practical Lectures for General Practitioners.

The New York Academy of Medicine, Fifth Avenue and 103rd Street, New York City, announces a third series of lectures for the general practitioner, to be held on Friday afternoons at 4:30 o'clock. These began on the 2nd of November and will continue through the 12th of April, 1929. The profession generally is invited to attend.

Dr. Emily Gardner,

Who has for several years been connected with the Bureau of Child Health of the Virginia State Department of Health, is now in New York where she has a six months' internship in contagious diseases at the Willard Parker Hospital.

Admiral Grayson Heads Gorgas Memorial.

Formally accepting the presidency of the Gorgas Memorial Institute which was recently tendered to him at the annual meeting of the Board of Directors held in Boston on October 10th, Rear Admiral Cary T. Grayson announced that it would be his purpose to maintain the field operations of the organization and to expand its publicity features as far as funds will permit.

"The plan of sending out trained speakers to appear before leadership groups of the various cities of the country in 'caravan' health trips will be continued", he said. "To close the gap between the public and scientific medicine by a tremendous health educational campaign is an imperative issue. We will continue to work in this direction by added newspaper publicity, radio talks, poster service, health corps organizations, and by platform appearances."

Admiral Grayson's application for retirement from the active list of the Navy, effective November 1st, has been acted upon favorably by President Coolidge, so that he will be able to devote his entire time to the Memorial activities. President Coolidge is the Honorary President of the Gorgas Memorial. The Surgeon Generals of the United States Public Health Service, Army and Navy, are on the Board of Directors.

Mr. Aubrey H. Straus,

Until recently director of the laboratories of the State Department of Health, has opened offices as consulting bacteriologist at 613 West Grace Street, Richmond, Va. He will do all types of bacteriological work—diagnostic examinations, autogenous vaccines, investigations and studies.

Vocational Schools in Roumania and Poland.

Roumania's Government first undertook the training of apprentices in 1920, and in 1927 there were in the country 141 schools for apprentices in industry and commerce, with a registration of nearly 16,500 pupils.

In 1927 Poland had 1,145 schools or courses for vocational training in industry or agriculture, with 153,000 pupils in attendance.

World Conference on Narcotic Education.

The second annual conference of committees of the World Conference on Narcotic Education and the International Narcotic Education Association will be held in New York City, at the Waldorf-Astoria Hotel, November 21-24, 1928. The New York Branch, in charge of this Conference, has offices at 578 Madison Avenue, New York City.

Dr. Raiford to Have Hospital in Franklin.

It is announced that Dr. R. L. Raiford, Franklin, Va., has leased the second and third floors of the Merchants' and Farmers' Bank Building, except two dentists' offices, for use as a private hospital. Dr. Raiford is already using several rooms on the second floor as offices and the other rooms are being remodeled and are expected to be in readiness for patients by the first of the year. Arrangements can be made to care for as many as twenty-five patients in this building.

Dr. J. Shelton Horsley,

Richmond, read a paper before the Inter-State Post-Graduate Assembly in Atlanta, October 15.

Dr. William R. Laird, Jr.,

Montgomery, W. Va., was recently elected president of the Central Tri-State Medical Society of West Virginia.

Speak in Roanoke,

At the staff meeting of Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Va., on

October the 23rd, the following doctors, upon invitation, read papers: Dr. Alan C. Woods, Baltimore, on "Medical Aspects of Optic Atrophy"; Dr. Lee Cohen, Baltimore, on "Report of Recent Results in Corrective Rhinoplasty," and Dr. H. S. Hedges, Charlottesville, Va., on "The Treatment of Laryngeal Tuberculosis."

Italian Cities Improve Their Milk Supplies.

Rome, Naples, Milan, and Verona have established milk centers where all milk intended for consumption in the city is sent for sterilization. At Italy's first conference on milk, held recently at Verona under Government auspices, the fact was brought out that the annual consumption of milk per capita in Italy is only 15 quarts, while it is 90 quarts in England, 235 quarts in Germany, and 265 quarts in Sweden.

Dr. R. L. Schuler,

Formerly of southwestern Virginia but more recently of Meadow Bridge, W. Va., has located at Broadway, Va.

Dr. M. T. McCulloch,

After practicing at Troutville, Va., for about twenty years, has moved to Elkton, Va., where he is engaged in practice.

Dr. J. R. Shacklette,

For some years located at Elkton, Va., has moved to Harrisonburg, Va., and has offices in the Professional Building, in that city.

Red Cross Playgrounds in Budapest.

Two hundred thousand children during the summer months of 1927 used the 18 playgrounds established in the public squares of Budapest by the Hungarian Red Cross. The equipment is of the simplest—a Red Cross flag, a rope to mark off the ground, and a first-aid box. The older children play organized games, and from time to time fetes are held, the children providing the entertainment and inviting their parents. The Red Cross has also undertaken the training of leaders in playground work, through courses in pedagogy, psychology, organized children's games, and first aid; the classes are recruited mainly from women teachers and volunteers with some experience in social work. At the end of the course an examination is given in 50 games. The movement has aroused considerable public interest.

Dr. D. M. Prince,

Of the class of '24, University of Virginia, Department of Medicine, and for a time located at the University, has recently returned to the States after a year spent in South America. He is located in the Washington National Bank Building, Ellensburg, Wash.

Dr. John S. Horsley, Jr.,

Richmond, Va., attended the meeting of the Warwick County Medical Society, in Newport News, Va., October 8, at which time, by invitation, he gave an illustrated paper on "What Can Plastic Surgery Do for the Crippled."

Classes in Home Hygiene for Negro Girls of Atlanta.

Courses in home hygiene and care of the sick have been added to the eighth-grade curriculum of the Booker T. Washington school at Atlanta, Ga., and an additional elective course in these subjects has been added to the twelfth grade. A small class of first-grade children has been transferred to the high-school building for use in practice work for the class in home hygiene in the preparation of food for the children, in training in cleanliness and good table manners, and in story telling.

Dr. George M. Kober Resigns as Dean.

Dr. George M. Kober, Washington, D. C., recently retired after a service of twenty-seven years as dean of Georgetown University School of Medicine, Washington, D. C. On acceptance of his resignation, Dr. Kober was made dean emeritus of the Medical School and was tendered a place on the board of regents of the University.

Coroner of South Richmond.

Dr. Raymond W. Paul has been appointed coroner of South Richmond, effective November 1. He succeeded the late Dr. E. Govan Hill.

A Legation Building to be Built by Vocational Students.

The new American Legation at Tirana, the capital of Albania, will be built by the students of the Albanian Vocational School, which was founded and is supported by the American Junior Red Cross. This is being done on the recommendation of the American minister to Albania with the approval of the Department of State. The construction will be done with the approval of the Albanian Government on an actual cost basis. The present school buildings were erected by the students, and a new dormitory will be built by them as a part of their school work.

Advice to Rabbit Hunters.

Now that rabbit hunting season is here, the State Department of Health says, "There is no reason why people should stop hunting rabbits merely because the germ of this diseases finds a home in the rabbit. Eating the cooked flesh of the rabbit, the well cooked flesh, does not subject anybody to danger. Underdone meat may contain germs, but well done meat is safe." This bulletin further states that the great source of danger is in handling dead rabbits, dressing them for cooking. If, however, the person dressing rabbits wear rubber gloves, there is no danger from infection in handling rabbits.

To repeat—there is no danger in hunting; the danger is in handling and in eating underdone rabbit meat.

The National Society for the Prevention of Blindness

Will hold its fourteenth annual meeting in the Russell Sage Foundation Building, 130 East 22nd Street, New York, November 26, 27 and 28. Industrial physicians, ophthalmologists, public health nurses, sight-saving class supervisors and others interested in preventing blindness and conserving sight will attend and take part in this conference. Special information as to this conference may be obtained from the above named society at 370 Seventh Avenue, New York City.

Dr. H. Taylor Hawkins

Announces his removal from Clover, Va., to Waynesboro, Va.

A. M. A. Now Broadcasts.

Through arrangements made with Station WBBM, Chicago, daily radio health talks are delivered from the headquarters of the American Medical Association each morning at 10 o'clock, Sundays and holidays excepted. These talks are made by some member of the headquarters' staff on a health subject which pertains particularly to his department.

A special evening feature may also be heard over Station WBBM, at 8 P. M., under the title "Health Hints from *Hygeia*." These talks last only three to four minutes, but are on subjects of universal interest.

Dr. C. Edward Martin,

Recently of North Emporia, Va., has located at Murfreesboro, N. C.

Dr. Clayton W. Eley,

Who has been located for several years in Portsmouth, Va., has gone to Norfolk, Va., where he is connected with the X-ray Department of St. Vincent's Hospital.

Dr. H. Colles Grant

Announces his removal from Smithfield, Va., to Staunton, Va., where he is connected with the staff of the Western State Hospital.

T. B. Christmas Seals.

Before our December issue appears, the Christmas Seal Sale will commence. This is the twenty-first year for the sale of these seals and all doctors are familiar with the splendid work which is accomplished by the money received from this source. Each of our readers is urged to buy as many of these seals as possible.

Dr. A. I. Dodson,

Richmond, recently attended a meeting of the Association of Military Surgeons, held in Baltimore, Md.

Dr. Kendall Emerson Director of National T. B. Association.

Dr. Linsly R. Williams, since 1922 managing director of the National Tuberculosis Association, has resigned and Dr. Kendall Emerson, of Worcester, Mass., has been appointed his successor.

After-Care of Infantile Paralysis.

The U. S. Public Health Service has issued a bulletin with regard to the after-care of infantile paralysis, in which it urges that the training of muscles should be begun as soon as the patient's limbs can be moved freely without pain. It is stated that in some cases this will be within three weeks after the attack and in some others after a much longer period. It is possible also to accomplish a great deal for cases that have been neglected for years. Premature manipulations, on the other hand, and ill-directed exercises, have often greatly retarded or prevented the maximum recovery possible.

This bulletin states further that the U. S. Public Health Service will be glad to furnish interested persons a copy of a set of exercises in muscle training, which are recommended in connection with the after-care of infantile paralysis.

Nursery Play School in Philadelphia.

The nursery play school established as an experiment last winter at Drexel Institute,

Philadelphia, is to be continued permanently, and a member of the staff of the Vassar College nursery school has been appointed its director.

The Ex-Interns' Association of St. Elizabeth's Hospital

Met at the Hospital in Richmond, Va., October 2nd, 1928, the president, Dr. W. C. Caudill, of Pearisburg, Va., presiding. At the morning session papers were presented by Dr. W. H. Higgins, Dr. John S. Horsley, Jr., and Dr. O. O. Ashworth, of the hospital staff, after which the meeting adjourned to the operating room, where Dr. J. Shelton Horsley held his clinic. Following the morning session, the sixteen members present were guests of Dr. J. Shelton Horsley at luncheon at the Commonwealth Club, at which short talks were made by a number and telegrams and letters were read from several members of the Association who could not be present.

At the afternoon session, papers were read by Dr. W. C. Caudill, president, and Drs. A. I. Dodson, M. L. Breitstein, H. H. Harris, Guy R. Fisher and A. A. Houser. At the business sessions following these papers, Dr. A. A. Houser, Richmond, was elected president; Dr. M. L. Breitstein, Baltimore, vice-president, and Dr. John S. Horsley, Jr., was re-elected secretary-treasurer. Opon adjournment of the business session, the Association was delightfully entertained at supper at "Greystone," the home of Dr. and Mrs. J. Shelton Horsley.

Dr. E. G. Gill,

Roanoke, Va., by invitation, addressed the Raleigh County Medical Society at Slab Fork, W. Va., on October 25, his subject being "Foreign Bodies of the Air and Food Passages." This was illustrated with lantern slides.

Dr. Park Lewis Recipient of Leslie Dana Medal.

Dr. Park Lewis, Buffalo, N. Y., vice-president of the National Society for the Prevention of Blindness, was in October presented with the Leslie Dana Medal. This is given through the Missouri Association for the Blind, of which Mr. Dana is a director. The inscription on the medal reads: "To Dr. Park Lewis. physician, scholar, humanitarian—for life long devotion to the prevention of blindness, 1928".

Obituary Record

Dr. William Claiborne Powell,

Petersburg, Va., died suddenly October 22nd, after having been out attending patients that day. Dr. Powell was a native of Dinwiddie County, Va., and fifty-eight years of age. He received his academic education at William and Mary College, and later took up the study of medicine at the Medical College of Virginia, from which he received his diploma in 1901. He located in Petersburg in 1902 and had become prominently identified with the medical profession of that city. He had been a member of the Medical Society of Virginia since 1904, was for a number of years secretary of the Petersburg Medical Faculty, and became secretary of the Post-Graduate Medical Society of Southern Virginia upon its organization, a couple of years ago. He is survived by his wife and several brothers and sisters.

RESOLUTIONS ADOPTED BY THE PETERSBURG MEDICAL FACULTY AND THE PETERSBURG HOSPITAL STAFF ON DEATH OF DR. WILLIAM CLAIBORNE POWELL

At a special meeting of the Petersburg Medical Faculty and the Petersburg Hospital Staff held today for the purpose of taking appropriate action relative to the death of Dr. William Claiborne Powell, which sad event occurred October 22, the folowing resolutions were adopted:

WHEREAS it has been the will of our Heavenly Father to remove from our midst our co-worker Dr. William Claiborne Powell,

RESOLVED, 1. Recognizing his high personal character and his professional attainments, the medical profession of the city, the county and the State has lost a valuable member, Petersburg a useful citizen, and his associates a faithful friend;

2. That we extend to the members of his bereaved family our deepest sympathy in their sorrow;

3. That the members of the Faculty and the Hospital Staff attend in a body the funeral of our deceased friend;

4. That these resolutions be spread upon the minutes of the Petersburg Medical Faculty and of the Petersburg Hospital Staff; that a copy be sent to the family and that they be published in the local press and in the VIRGINIA MEDICAL MONTHLY.

WILLIAM F. DREWRY,
J. BOLLING JONES,
E. W. YOUNG,
Committee.

October 23, 1928.

Dr. Edward Govan Hill,

Richmond, Va., died October the 14th, after an illness of several weeks. Dr. Hill was sixty-five years of age and a native of King William County, Virginia. He received his medical education at the University Col-

lege of Medicine, Richmond, from which he graduated in 1900. Dr. Hill had practiced his profession in Richmond since his graduation, was assistant coroner for the city of Richmond, a surgeon of the Southern Railway, and one of the founders and the first president of the Manchester Medical Society. He was also a member of the State Society, and other organizations. His wife and two children survive him.

Dr. George Douglas Meriwether,

Confederate veteran and retired physician of Buena Vista, Va., died at his home in that place, October 7, aged 85 years. He had retired from active work following a stroke of paralysis, in 1918. He graduated in medicine from the University of Pennsylvania, Philadelphia, in 1870, and practiced in Amherst County, Va., until he moved to Buena Vista, in 1887. During his active years, he was much interested in the development of that city. He had been a member of the Medical Society of Virginia for a number of years. His wife died in 1912 and only child in 1915, but he is survived by a sister and niece, who made their home with him, and two brothers.

Dr. Walter Adgate Warfield,

Alexandria, Va., died October 24, after an illness of five days with pneumonia. He was taken sick the day after returning from North Carolina where he went to see his wife who was there for her health. He studied medicine at University of the South, Sewanee, Tenn., and also at George Washington University, Washington, D. C. He received his diploma in medicine in 1905 and the following year joined the Medical Society of Virginia of which he was a member to the time of his death. In 1916 he went to the Mexican border with the Virginia National Guard but resigned and resumed private practice on his return from this service. His wife, parents and two brothers survive him.

Dr. Ray Jackson Neff,

House surgeon at Elizabeth Buxton Hospital, Newport News, Va., was burned to death in his automobile early in the morning of October 21, after parking it for the night in his garage. When the flames attracted help, the car was a mass of flames within and Dr. Neff was already dead. Dr. Neff was thirty years of age and had graduated from the University of Virginia, Department of Medicine, in 1923, following which he served an internship at University of Virginia Hospital before locating in Newport News. His home was formerly in Smyth County, Virginia.

Dr. Rawley W. Martin, Jr.,

Chatham, Va., died suddenly at his home in that place, October 18th. He was fifty-eight years of age and a son of the late Dr. and Mrs. Rawley W. Martin, of Chatham and Lynchburg, Va. Dr. Martin graduated in medicine from the Universtiy of Virginia in 1894 and had been a member of the Medical Society of Virginia since that year. He was unmarried but is suvived by several brothers and sisters.

Dr. George Ransom Faircloth,

Formerly of Bath County, Virginia, but more recently of Baltimore, Md., died recently, aged forty-four years. He was a member of the Medical Society of Virginia. Dr. Faircloth received his diploma in medicine from the Maryland Medical College, Baltimore, in 1909 and, since his return to Baltimore, had been connected with the Brady Urological Institute.

Captain Clarence F. Ely,

Chief medical officer of the Fifth Naval District stationed at Hampton Roads Naval Base, died November the 2nd, at the Naval Hospital, Portsmouth, Va., after a short illness with pneumonia. He was forty-nine years of age and a graduate in medicine from Jefferson Medical College, Philadelphia, in 1902.

Dr. Charles Banks McNairy,

For some time superintendent of the Caswell Training School for backward and mentally defective children at Kinston, N. C., died at his home in Lenoir, N. C., October 29th, at the age of sixty-one years. Dr. McNairy graduated in medicine from the College of Physicians and Surgeons, Baltimore, in 1893. He was nationally known as a eugenist and was an ex-president of the American Association for the Study of Feeble-mindedness. His wife and four children survive him.

Dr. Greenfield Sluder,

Former president of the American Laryngological Association and internationally known for his work in diseases of the nose and throat, died at his home in St. Louis, Mo., October 10th. He was sixty-three years of age and graduated in medicine from the Washington University School of Medicine, St. Louis, in 1888.

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MANAGEMENT OF THE ESSENTIAL FEATURES OF IMPAIRED KIDNEY FUNCTION.*

By GARNETT NELSON, M. A., M. D., Richmond, Va.
Medical Department, McGuire Clinic.

Any attempt at affecting in any way the various functions of the kidneys entails an acceptance of some theory of normal kidney physiology, and an understanding of the factors more or less harmoniously involved in accomplishing their work. Broadly speaking, the work of the kidneys consists in eliminating certain substances from the blood stream, especially the end-products of proteid metabolism, and at the same time holding back certain other substances, entirely or in part, for example albumin and urea,—that is, in maintaining a certain percentage composition within the blood plasma; in regulating the osmotic relations in the tissues; in helping to keep constant the volume of the circulating blood; and in helping maintain a fairly constant acid alkali balance. As a talking point, we accept Cushny's theory, confirmed by Richards with his capillary pipet, that the normal kidney physiology in the glomeruli is a selective filtration, purely an excretory process; that as the filtrate passes down the tubules there is a concentration of this solution by absorption, chiefly of glucose, urea, salts and water, and also a definite secretory function, namely, the synthesis of ammonia, hippuric acid, and perhaps certain other nitrogenous compounds. The synthesis of ammonia is of particular interest in that it is not only an eliminative process, but is also a part of the method of protection against the loss of fixed alkali, varying directly with the hydrogen ion concentration, and inversely with the volumes per cent of carbon dioxide. In the presence of carbon dioxide as high as 80 volumes per cent, the kidney ceases to form ammonia altogether, and it is by this peculiar functional ability to vary according to the needs of the occasion that protection against a tendency to either acidosis or alkalosis is to some extent afforded.

Before taking up the question of our ability to influence kidney function, we should refresh our memories on one other point, namely, that the two kidneys contain a vast number of glomeruli, about 4,000,000, each with its own tubule, that normally the glomeruli do not all function at the same time, that all of the units in one kidney and a third of the other may be at absolute rest or destroyed, and all kidney function necessary for perfect health may go on very well. The normal function of any one glomerular unit depends on several factors: 1. The condition of the epithelial cells in the capsule and tubules; 2. The permeability of the capillaries of the glomerulus: 3. The composition of the blood plasma within the capillaries; 4. The pressure and especially the speed with which the stream is flowing; and 5. A nervous mechanism working entirely probably by its effect on the rate of flow and the pressure.

All kidney therapy must be aimed at one or more of these factors, and success or failure is in proportion to whatever special influence can or cannot be obtained. Other things being equal, if we can speed up the flow of blood through the capillaries, we can increase the total urinary output, or, if we can increase capillary permeability, certain substances will come through at lower concentrations, etc.

We see, therefore, that the management of impaired kidney function depends on at least a reasonably clear understanding of exactly what function is at fault, and, as far as possible, why; and the folly of relying on urinalyses alone to determine our efforts becomes obvious. At the risk of being indicted for vain repetitions, we must inveigh against this still too common practice of relying on urinalyses as guides in kidney problems. It cannot be done. Proper clinical histories, thorough physical examinations, and analyses of retention, ability to concentrate, latent edemas, etc., are essential. It is just as wrong to treat

*Read before the fifty-ninth annual meeting of the Medical Society of Virginia, at Danville, Va., October 16-18, 1928.

radically those who need little or no treatment as it is to neglect those who are seriously ill. For example, a focal nephritis may show a large amount of albumin and numerous casts, and yet the number of healthy glomerular units be so great that kidney function is in no other way affected or, on the contrary, a single urinalysis of a specimen from an arteriosclerotic kidney may show in the urine nothing more than a low specific gravity, a trace of albumin and an occasional cast, and lull the careless physician into false security. The possible insignificant urinary findings in serious disease should be especially borne in mind by the obstetrician advising a woman contemplating pregnancy, or a surgeon planning operations of election.

Understanding the underlying principles of kidney therapy as far as they are understood by anyone is not a very difficult matter, and we should adopt some simple classification of kidney pathology, pigeon-hole the functional disturbances accordingly as far as possible, and standardize rules of management.

The whole question of kidney disease has been greatly clarified during this century, particularly in the last few years, and new items are being gradually added so that it is necessary to follow the literature fairly closely. Still, practically all we need add to the classification of disease that we were taught at college is an understanding of what is meant by focal nephritis and nephrosis.

Focal nephritis is a glomerular nephritis involving one or more glomerular units in one or both kidneys, with albumin, casts and blood, perhaps pretty free bleeding, but possibly no symptoms nor signs of uraemia and an unaltered kidney function.

Nephrosis is a degenerative tubular process, possibly a systemic metabolic disturbance, with the kidney involvement as its chief manifestation in the light of our present knowledge. In the first few days of acute nephrosis, and fairly indefinitely in chronic nephrosis, the glomerular function may remain undisturbed, and, despite the large amount of albumin in the urine, the casts and high specific gravity, and perhaps rather extensive edema, there may be no hypertension, no cardiac hypertrophy, no secondary anemia, no retinal changes, and no indications of uraemia whatsover. With the exception of a raised cholesterol content and an altered relation of globulin to albumin the blood chemistry may be expected to remain within normal limits. The most familiar illustration of acute nephrosis is that of bichloride poisoning. Of course, if the tubular degeneration and blockage are extensive enough to accomplish a complete anuria, the uraemia soon parallels that of any other suppression.

It is in these two conditions that danger of over-treatment must be guarded against, especially in regard to the intake of proteid foods, meat, eggs, etc. When a patient with nephrosis comes in complaining of exhaustion and loss of weight, stating that he has had no meat for several months, and the daily loss of protein in urinary albumin amounts to ten or fifteen grams, the reason for his exhaustion and loss of weight becomes apparent. Allowing a liberal proteid diet will do the kidney no harm and may restore his strength and weight. A very simple method of handling the protein intake is the point system, in which a point represents four grams of protein, and tables of foods are prepared with the proteid content of each article worked out so as to state the number of grams of protein in certain weights or volumes of food. The patient is allowed so many points daily. Eight ounces of milk, for example, contains two points, i. e., eight grams of protein. In regard to milk, as has been frequently pointed out, it will not suffice by itself as a diet for any form of impaired kidney function. There is too much protein for nitrogen retention, and too much salt and water for edema.

The details of functional treatment cannot very well be separated from a consideration of the whole organism. This is axiomatic, and no more true of kidney disease than many others. In pneumonia, for example, the problem is to keep the patient alive long enough for recovery to take place of itself. So, also, particularly in acute nephritis, or even more especially in acute nephrosis, as in bichloride poisoning, if we can sustain life long enough, complete recovery with complete regeneration and restoration of function may supervene. In fact, there is a sharp contrast in favor of kidney therapy, for, though in pneumonia respiratory function may be unaltered and unmanageable, in nephritis we may activate, continue or completely restore kidney function. Two general rules should be repeated: 1. When we have nitrogen retention and no

edema, limit the protein intake, and force water—a gallon or more is not too much; 2. When we have edema and no nitrogen retention, inhibit salt, restrict fluid intake, and do not worry about proteins.

It is well to bear in mind that functional disturbances may be out of all proportion to true kidney pathology. For example, in enlarged prostate with retention, ureteral pressure may be so high that capillary permeability is impossible, or in unilateral ureteral stricture the kidney on the opposite side may shut down. Proper relief of back pressure will restore function on the one hand, and some stimulating diuretic, such as novasurol, may reactivate inert glomeruli on the other, converting suppression into free diuresis.

The diuretic value of water is not hard to understand, provided we bear in mind the factors involved in the action of any one glomerular unit and also the tremendous kidney reserve, that is, the number of glomerular units that may be idle. In uraemia water dilutes the blood plasma, rendering it more filterable, and increases the volume of blood, improving the function of each glomerulus, and bringing perhaps a million or more inert glomeruli into action. This is too important to pass over without more emphasis, and so simple that the real mystery lies in the lack of universal application. Profound uraemia with very high nitrogen retention may at times be entirely cleared up by forcing water alone, provided it is really forced, i. e., a quart or more given intravenously several times daily.

Rest or exercise, fresh air, relief from mental strain or strenuous business cares, bodily warmth and comfort, tepid baths or hot packs group themselves intimately. In passing, let me again stress the importance of careful history taking. I allude particularly to the questions of occupation and habits. It is always necessary to go into details and get a clear mental picture of the daily activities of each individual patient, and give due consideration to their possible influence on kidney effort, arteriosclerosis, cardiac work, or hypertension. In severe uraemic intoxications, absolute rest in a warm, quiet, well-ventilated room is essential, and hot packs, if unaccompanied by excitement, are indicated. Induced sweating aids definitely in elimination. It has been shown that the skin may assume compensatory activity, getting rid in the course of twenty-four hours of at least 0.2 gm. of nitrogen. The directions for the management of early impairments, with little or no edema, trifling nitrogen retention, little elevation of pressure, soft arteries, and no hypertrophy, must be worked out, giving due consideration, as was said above, to occupation and habit, and laying particular stress on the amount of exercise to be allowed. It is probably true that the commonplace expression, "You need exercise", used indiscriminately, frequently shortens life.

When we come to a consideration of kidney rest in severe acute processes, we are, of course, compelled to think in relative terms only. No matter how severe the inflammation may be, and no matter how desirable absolute rest may be, it is manifestly necessary in the presence of retention to force kidney function by whatever means we may, trying first one thing and then another, always bearing in mind the several factors involved in the normal action of glomerular units, and directing our efforts towards some special effect. Very simple measures may accomplish startling results. For example, in mercurial nephrosis with associated cessation of filtration and complete suppression, a single intravenous injection of normal salt solution may whip the glomeruli into action and enable us to sustain life until regeneration within the tubules occurs. Functional suppression with impending death, as from obstruction of one ureter, with contra-lateral sympathetic anuria, may, as was said above, be interrupted and free diuresis accomplished by the direct action on the glomeruli of one of the new mercurials, such as novasurol or salyrgan; or, another illustration, complete suppression associated with shock, as from a severe automobile accident, that has lasted several days in spite of rest, warmth, small doses of morphine, and digitailis, may be overcome by activating filtration with glucose, water and insulin. We have recently seen exactly this state of affairs. Within one hour from the time the injection of glucose was begun, seven ounces of urine were voided, and from then on kidney function proceeded normally. Here water diminishes the concentration of substances in solution in the blood plasma, reduces its viscosity, and itself stimulates the glomeruli; glucose furnishes heat and energy to the walls of the capillaries, capsule and tubules, and insulin,

acting as a hormone, aids the tissue enzymes in their use of glucose.

In cardiac decompensation with insufficient speed of flow through and insufficient pressure within the capillaries, accompanied by general edema and massive accumulations in the serous sacs, we may at times control at will the total daily urinary output by rest, warmth, fresh air, restricting salt and water and using digitalis, ammonium chloride or nitrate, and mercury. In regard to digitalis, it should be remarked that very high systemic pressure is not necessarily a contraindication to its use. It is more a question of cardiac rate and rhythm and standardization of pressure. Allusion might be made to a case of generalized edema with pulmonary congestion, marked dyspnoea, and very scanty urine, having tachycardia and arrhythmia of rate and force, in which the only drug therapy was giving twenty-two grains of digitalis in forty-eight hours and four theominal tablets daily. The highest reading at which any sound came through below the cuff was 260, and there was no point at which all cardiac movements produced a sound. By the third day the heart rate was 70, there was no arrhythmia, the pressure had fallen to 220, and there was marked diuresis, with relief of all symptoms.

The contrast between the effects of sodium chloride and ammonium chloride might at first thought be confusing, but clears up pretty well when we consider that sodium chloride is a strong basic salt, whereas ammonium chloride is very high in hydrogen ions and readily breaks up to aid in the formation of urea.

We know that the average adult carries about 300 grams of salt in his various tissues, that the blood can contain only 25 to 30 grams of the total chlorides, and that the concentration in the plasma must be kept at a fairly canstant level. A concentration as low as 200 m.g. per 100 c.c. cannot be endured and a marked hypochloremia may of itself be fatal. This is incidentally one reason that bowel obstruction above the colon is so much more desperate than down in the colon. Chloride entering the stomach by mouth, or secreted in hydrochloric acid must reach the large bowel for absorption into the plasma.

The presence of edema from retention of salt and water is in some way influenced by the acid alkali balance. Sodium chloride increases the akaline tendency, and ammonium chloride must overcome this and produce an acidosis before it can pull salt and water out of the tissues and cause diuresis. This is, of course, not the whole truth in regard to edema, but merely an attempt to explain the contrast between the effects of sodium and ammonium chloride in so far as the two salts have to do with edema.

There are two other matters to think of,—the possibility of influencing the nervous factor in kidney function, and the glands of interal secretion. In regard to the nervous factor, there is not a great deal to be said. We know that emotional disturbances, particularly fear, cause diuresis, and we know that prolonged mental strain has to do with hypertension and chronic nephritis, but we know of no way to stimulate or depress this or that nerve and get definite results. Of the glands of internal secretion still less is known. Adrenalin, though raising systemic pressure, does not cause diuresis. Insulin aids in the use of glucose. Pituitrin regulates the output in diabetes insipidus. In the light of our present knowledge, these latter two are the only practical points in the use of the products of the glands of internal secretion.

In conclusion, it may be said that:

1. The essential factors of kidney function are to a great extent subject to direct control.
2. Prolonged kidney efficiency and life extension can be accomplished by attention to diet, occupation, habit and the hygiene of daily life.
3. The composition of the blood plasma, that is, its capacity for filtration, may be influenced, especially by diet, salt and water.
4. The speed of flow and pressure within the capillaries may be improved, especially by digitalis in cardiac decompensation.
5. The number of glomerular units in action may be increased, or the action of inert units stimulated, by water, salt, glucose, ammonium chloride, mercury, as well as in other ways.

REPORT OF A CASE OF BI-LATERAL CYSTIC KIDNEY.*

By LAWRENCE T. PRICE, M. D., Richmond, Va.

This patient, a woman, thirty-nine years of age, entered the Johnston-Willis Hospital July 19, 1928, with the complaint of pain in

*Read before the fifty-ninth annual meeting of the Medical Society of Virginia, at Danville, Va., October 16-18, 1928.

the abdomen. The following history was obtained:

Two days previously she was seized with a sharp pain in the right abdomen, accompanied with a dull dragging sensation. After a few hours quiet in bed the symptoms disappeared. The attack of pain was repeated on the following day. Before, during, or following the attacks, there was no alteration in the volume of urine, or frequency of urination, and no pain upon voiding. The urine appeared to be normal in character. Patient stated that she could palpate a mass in both sides of her abdomen which she had observed for the past five years. The mass, according to the patient's observation, varied in size.

Patient stated that she had her first attack about five years ago, and the attacks had recurred on the average of every five or six months. These attacks would last one or two days. During the first two years the attacks would be followed by a hematuria.

Patient is unmarried, has been fairly active, and has been employed as a secretary for a number of years. Her weight has remained, for about fifteen years, around 140 pounds. Appetite good and has enjoyed good health, other than attacks of abdominal pain above referred to, and malaria two years ago.

Past History: Usual childhood diseases. No history of pneumonia or typhoid fever.

Family History: Mother living and well. Father died of heart disease. Five brothers living and well. Two sisters living and well. No history of tuberculosis or cancer in family.

Physical Examination: Middle aged woman, slightly undernourished but well developed. Head and neck grossly negative. Chest—Sides symmetrical; ribs prominent; breasts moderate in size, consistency soft, no masses felt. Lungs—expansion free and equal; percussion, resonant throughout; ausculation, breath sounds vesicular. Heart—not grossly enlarged, sounds are clear and distinct, with no murmur elicited; extrasystole every four or five beats. Abdomen—General shape of abdomen oval with a bulging of abdominal walls on either side just below costal margins, extending to iliac crests. Palpation, firm mass, not tender, felt on either side of abdomen, extending from costal margins to one inch of mid-line, with curved surface to iliac crests. This mass is dull on percussion. Extremities essentially negative.

Urological Examination: Cystoscopic—Bladder negative for stone, ulcer, tumor, inflammation and pathology of any kind. Both ureter openings normal in appearance. Catheter introduced into right ureter and kidney 45 c.m. (about three inches further than normal) showed that urine flowed very freely from this catheter. Catheter was introduced in left ureter for 20 c.m., it being impossible to introduce the catheter further; secretions were very scant from this catheter.

Laboratory: Bladder specimen of urine—straw; clear; acid; 1,004; faint trace of albumen; sugar negative; rare epithelial cells and leukocytes. Right kidney specimen—frequent epithelial cells and leukocytes. Culture negative. Phthalein appearance nine minutes; fifteen minutes trace. Left kidney specimen—many epithelial cells, occasional leukocyte. Culture negative. Phthalein gave no appearance in twenty-four minutes; remaining portion first hour, phthalein 8 per cent; second hour, 12 per cent; third hour, 4 per cent.—total 24 per cent. Hb. 73 per cent; red cells 4,290,000; leuc. 5,300; P. 83; S. L. 17. Blood sugar 90.9; N. P. N. 25.0; creatinin 2.72.

Twenty c.c. sodium bromide solution were injected into pelvis of the right kidney and 23 c.c. into pelvis of the left kidney and a pyelogram was made.

X-Ray Report: Right kidney: outline of right kidney not made out on films but negative for calculus. Left kidney: outline of left kidney not made out on films but negative for calculus. Ureters and bladder are negative for calculus. After introduction of opaque catheters and injection of sodium bromide solution, the left ureter is seen to take a normal course up to the lower margins of the transverse process of the third lumbar vertebra. At this point the catheter passes outward and downward to a point one inch above the crest of the ilium. The pelvis of the kidney is markedly enlarged. The calices are destroyed. The size of the kidney is approximately six inches in length, the diameter being approximately five inches. The left kidney and ureter take a normal course which reaches a point corresponding to the upper margin of the body of the fourth lumbar vertebra. At this point there is a distinct kink in the ureter. There are two filling defects noted approximately one inch from this kink measuring five by three m.m. in diameter. The pelvis of the kidney

is markedly enlarged and flattened. The upper calices are markedly enlarged; the middle calices are completely destroyed; the lower calices are slightly enlarged and blunted. Size of left kidney 6x5½ inches.

Conclusions: The patient has a polycystic kidney on both sides of considerable size. Taking the history of the case into consideration, it is presumed that they are benign in character. The functional ability of the right kidney is below normal and that of the left is practically not at all.

Diagnosis: Cystic tumors of both kidneys.

A brief summary of the literature on this subject may be interesting.

Several theories have been advanced regarding the formation of polycystic kidneys, and, of these, three deserve mention. According to Virchow,[1] the cysts are due to retention resulting from a closure of the papillary ducts by deposits of uric acid and calcium salts. Virchow later modified this view, believing that the closure was due to an inflammation of the papillae; hence the term "nephropapillitis." This view has now been completely abandoned, owing largely to the experimental studies of Petterson[2] and Tollens,[3] who have shown that obstruction of the papillary ducts is followed not by cyst formation, but by an atrophy of the tubules.

The neoplastic theory of Bridigi and Severi[4] received considerable support and has not yet been completely given up. These investigators noted epithelial proliferation or sprouts from the tubules of the kidney into the connective tissue surrounding them, epithelial nests, which they thought became converted into cysts through degenerative changes, and pseudopapillary formations on the inner walls of many of the cysts. The conditions showed marked similarity to that found in cystadenomas of the ovary, and they advanced the idea that it was a true neoplasm.

The third view is that of Hildebrandt,[5] who based his conclusions upon our present-day conception of the dualistic formation of uriniferous tubules. He believed that the cyst formation is due to a failure of the union between the collecting tubule and the metanephrogenic anlage; with the beginning of secretory activity of the glomerulus and kidney tubule, a cyst is formed. This view was confirmed by Ribbert,[6] Meyer,[7] and many others, and is today the most generally accepted theory of the formation of polycystic kidney.

However, the question is not entirely settled as yet. The studies of Von Mutach,[8] confirmed by Bunting,[9] have shown that a direct continuity could be traced between the cysts and the kidney tubules. Berner[10] found carmine within the cysts after its injection into the ureter. Greene[11] has made wax models of the uriniferous tubules in this condition, as well as isolating them by the hydrochloric acid maceration method, and finds direct continuity between the cysts and the collecting tubules. He concludes that retention alone is insufficient to explain the mode of formation of the cysts.

The frequency of polycystic kidney is given by Nauman,[12] who found sixteen cases in 10,177 autopsies; of these fourteen were bilateral. Sieber[13] has collected 244 cases from the literature, of which the age incidence is given as follows.

8 weeks to 19 years	32 cases
20 years to 29 years	26 cases
30 years to 39 years	22 cases
40 years to 49 years	67 cases
50 years to 59 years	40 cases
60 years to 69 years	10 cases
70 years to 79 years	6 cases
80 years to 89 years	2 cases

He finds that the condition occurs bilaterally about ten times more frequently than unilaterally.

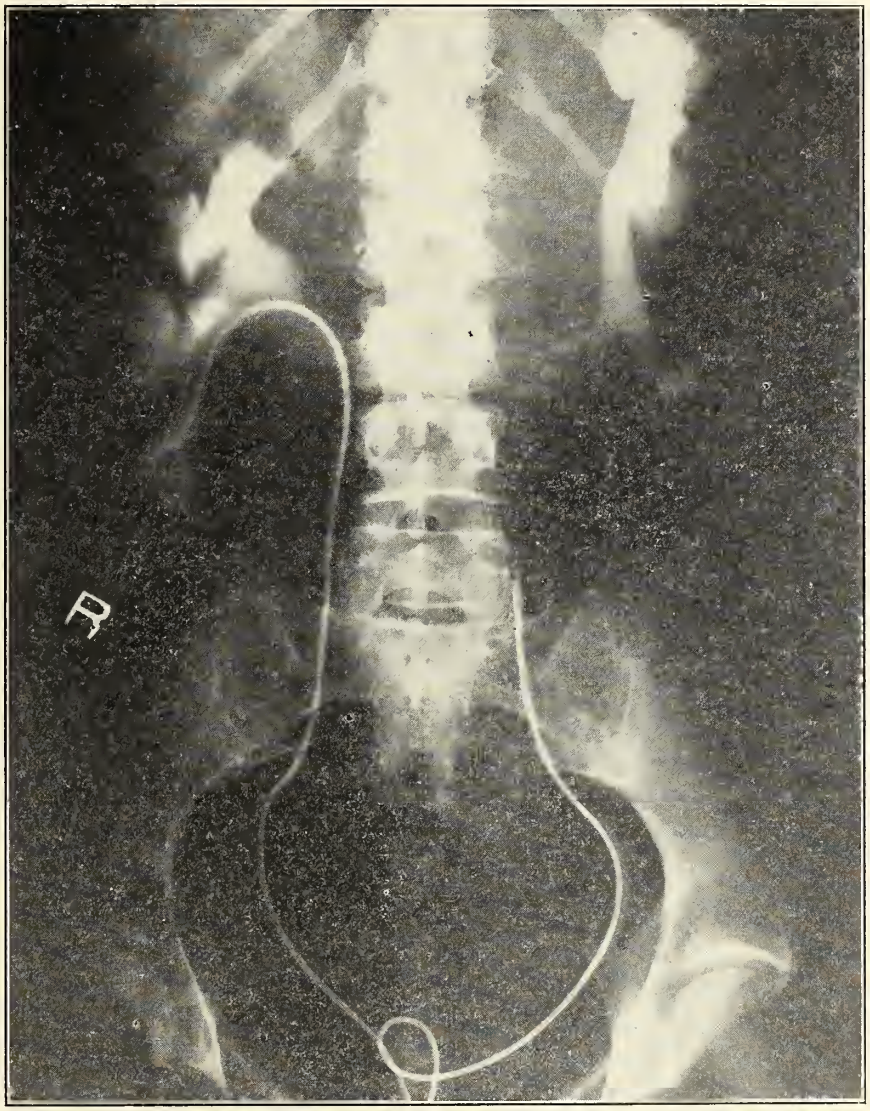
A marked hereditary tendency has always been noted. This is strikingly shown in two families described by Steiner (cited from Sieber). In one family, the father, ten-year-old son, and sister of the father had polycystic kidneys; in the second family, the father, son, and three sisters of the father were so afflicted, while, in addition, several of the children showed albuminuria.

One of the most common symptoms of the disease is pain. This may occur over a period of years, may come on as a late symptom, or may be entirely lacking. It is usually of a dull aching character and is probably due to the increased size and weight of the kidneys. Hematuria, of an intermittent character associated with pain, lasting for several days or weeks and followed by a complete remission, occurred in about one-half of the cases collected by Sieber. The urine may or may not be normal, depending upon the amount of normal renal tissue left between the cysts. Al-

buminuria may occur, but is inconstant; casts are seldom seen, red and white blood-corpuscles are found in small numbers.

Of the physical signs, a palpable tumor is the most important. The kidney is felt as an irregular, hard, compact, enlongated mass, having an irregular surface. Fluctuation is absent and this sign has been used to distinguish the condition from hydro- and pyo-nephrosis. The finding of bilateral palpable kidney tumors is of great importance, but is not pathognomonic, as Rohrer (cited by Sieber), in a series of thirty-seven kidney neoplasms, found this condition to be bilateral in five.

The pyelogram is a most important aid in the diagnosis of polycystic kidney. In the usual form, where the cysts are mostly in the parenchyma, the kidney is enlarged in all directions. The effect on the pelvis is most marked in the longitudinal direction, while the calices at either pole may be spread apart. The characteristic lengthening of the pelvis, without any dilatation, is pathognomonic. More rarely, if large cysts develop in the lowest portions of the columns of Bertini, the calices may be stretched out over their surfaces, elongated, and converted into thin convex slits. This may cause in the pyelogram



Bilateral pyelogram of the case reported.

the appearance of thin lappets like those produced by the invasion of the pelvis by a tumor mass. The remainder of the pyelogram will, however, usually give the diagnosis of polycystic kidney.

The urine is usually abundant and of low specific gravity. Hematuria, albuminuria, and cylindruria may occur. When renal insufficiency becomes marked, any of the symptoms of uremia may be present, and retention of the urinary constituents in the blood will occur.

The distinction which was formerly made between polycystic kidneys of the adult and those of infancy and early years is no longer held. The tumors are believed to be present at birth, but may not begin to grow until after middle age.

Three types of clinical course of the disease are distinguished by Sieber,[14] although various combinations of these are found. The first is the uremic form with an insidious onset, systemic symptoms of uremia, with death after eight to twenty days. The second is the Bright's form, which is characterized by symptoms of chronic nephritis—cardiovascular changes, edema, albuminuria, etc. This form runs a much longer course, as high as twenty years. In the third type, the renal or surgical form, the symptoms are referable directly to the kidneys—hematuria, lumbar pain, etc. The course is variable, there are attacks and remissions, and it averages about three years in length. Death is due to uremia.

A polycystic kidney may be the site of practically any other renal disease, as calculus, hydronephrosis, pyelonephritis, tuberculosis, etc. When this occurs the problem is much complicated.

The treatment of polycystic kidney is generally a medical problem, the guiding principles of which are the same as for chronic nephritis. The patient should lead a very careful life as regards exercise, food, drink, and exposure to cold. He should be seen occasionally by his physician and a careful urinary examination and functional tests made to determine the progress of the disease.

When it is definitely determined that the condition is gradually becoming worse, the question of operative intervention must be considered. Much has been written upon the subject and there is still much doubt as to what is the best method to pursue.

In an excellent study of the subject, Brin has found that nephrectomy has been carried out in seventeen cases. The mortality has been so high that this procedure stands condemned. In twenty-two cases of nephrotomy or nephrostomy the mortality has been 31.8 per cent. Only two patients are reported still alive after two years. Nephropexy and decapsulation have been done a few times. The most efficient procedure has been puncture or incision of the cysts. The method of puncture has been championed by Rovsing, who advises that the kidney should be exposed and multiple punctures of the superficial and deep cysts carried out. In two cases Rovsing reported that remarkable amelioration had occurred, that the renal function was considerably improved, and that pain, which had been present, had disappeared. Other surgeons have confirmed these results, while some have reported failures. Kuster recommends that the superficial cysts be excised as completely as possible. The incision may be done with or without cauterization. Brin collected sixteen cases, treated thus, with four deaths (25 per cent mortality). The duration of the results in those who lived cannot be given. When the case is complicated with unilateral infection and suppuration, a calculus with hydronephrosis or tuberculosis, operation may be indicated and perhaps safely carried out on the affected side, but the fact that the other kidney is practically always polycystic makes any extensive operation hazardous. When fever, associated with anuria or uremia, occurs, one may consider operating upon a badly infected side, but, as a rule, such operations are dangerous.

One may, therefore, sum up the situation in advising that medical treatment as a rule is the method of choice. In some instances surgical evacuation of the cysts may be justifiable. One connot as yet state what methods are best to employ or what results may be expected.

BIBLIOGRAPHY.

1. Virchow, R.: Uber congenitale Nierenwassersucht, *Ges. Abhendl. z. Wissensch. Med.*, 1856, 864 (Cited from Greene).
2. Petterson, A.: Uber die Veranderungen der Niere nach Lasion der Palille beim Kaninchen, *Beitr. z. Allg. Path.*, xxxiii, 606, 1903.
3. Tollens: Uber die Folgen der Markkegelobliteration der Kaninchenniere, *Arch. f. Path. Anat. und Physiol.*, clxxvii, 477-485, 1904. (Cited from Greene).
4. Bridigi, V., and Severi, A.: Contributo Alla Pathogenesi Delle Cisti Renale, *Lo Spermien-*

tale, xlvi, i, 1880. (Cited from Greene).
5. Hildebrandt, O.: Weiterer Beitrag zur Pathologischen Anatomie der Nerengeschwulste, *Arch. f. Klin. Chir.*, xlviii, 343-371, 1894.
6. Ribbert, H.: Uber die Entwickelung der Bleibenden Niere und die Entstehung der Cystenniere, *Verhandl. d. Deutsch. Path. Gesellsch.*, ii, 187, 1900. (Cited from Greene).
7. Meyer, E.: Uber die Entwickelungstorungem der Niere, *Arch. f. Path. Anat. und Physiol.*, clxxiii, 209, 1903.
8. Von Mutach, A.: Beitrag zur Genese der Congenitalen Cystennieren, *Arch. f. Path. Anat. und Physiol.*, cxlii, 46, 1895.
9. Bunting, C. H.: Congenital Cystic Kidney and Liver with Family Tendency, *Jour. Exper. Med.*, viii, 271, 1906..
10. Berner, O.: Zur Zystennierenfrage, *Arch. f. Path. und Physiol.*, ccxi, 265, 1913.
11. Greene, C.: Bilateral Hypoplastic Cystic Kidneys, *Amer. Jour. Dis. Child.*, xxiv, 1-19, 1922.
12. Naumann, H.: Uber die Haufigkeit der Bildungsanomalien der Nieren, Kiel, 1897.
13. Sieber, F.: Uber Cystennieren bei Erwachsenen, *Deutsch. Zeitschr. f. Chir.*, lxxix, 406-507, 1905.

A CASE OF TUBAL TWIN PREGNANCY.

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The rarity of recorded instances of tubal twin pregnancy would seem to make desirable a brief report of any additional cases. A recent examination of the literature by Arey (*Anat. Rec.*, Vol. 23, 1922) revealed only forty authentic cases. Arey's analysis of this material shows that tubal monochorial twins occur twice as frequently as dichorial twins. This preponderance of monochorial over dichorial tubal twins he ascribes in part to secondary fusion of originally dichorial twins, and in part to conditions of inadequate oxygenation acting as causative factor of monozygotic twinning.

Clinical History.

A twenty-two year old married white woman entered the University Hospital on April 23, 1928, complaining of pain in the right lower quadrant of her abdomen. Three weeks before, after a long automobile ride, she had had a short attack of severe lower abdominal pain associated with nausea and transitory faintness. A few days later she had another attack of nausea and of pain with localization in the right lower quadrant of her abdomen. The attack that brought her to the hospital began two days previously and was similar to her former ones except that the pain continued. She had had similar attacks two years before and one year before. Her last menstrual period had been on March 4th. Her menstruation had always been slightly irregular since its establishment at the age of thirteen. She had had one pregnancy resulting in a miscarriage, one and a half years before admission.

Examination on admission showed the following positive signs: moderate tenderness and slight spasm of the right lower quadrant of the abdomen, slight reddening of the cervix uteri with a slight leucorrheal discharge, and tenderness in the right fornix. Temperature was 99° F., and leukocyte count 6800. Operation was deferred. The next day her pain having slightly increased and there having appeared slight uterine bleeding, operation seemed indicated. Pre-operative diagnosis was acute appendicitis with salpingitis as a possible alternative. Operation was done under general anesthesia by Dr. W. J. Rollins. On entering the peritoneal cavity slightly cloudy free fluid was encountered and the appendix was found to be enlarged, edematous, and slightly reddened. After removing the appendix, the right uterine tube was brought into view and found to be reddened and enlarged in its middle portion to three times its normal size. This tube was removed and found to contain a blood clot 3 cm. in diameter with a definite sac and two small objects thought to be embryos. The pathological diagnosis was chronic appendicitis and tubal pregnancy. Following the operation the patient made an uneventful recovery.

Microscopical Study

Microscopical examination of the material confirms the macroscopic diagnosis of tubal twin pregnancy. The single chorionic vesicle has an internal diameter of approximately 25 millimeters. It contains no reticular magma. The enveloping shell of blood clot has an average thickness of 5 millimeters. This includes a few scattered chorionic villi in the region underlying the embryos. The villi are covered with a considerable layer of plasmoditrophoblast. The cytotrophoblastic layer is in process of disappearance. The villi have the general histology of approximately the eighth week of pregnancy. The core appears fibrous and contains a few capillaries with scattered normoblasts.

The two embryos are separated by a distance of 10 millimeters. Each is adherent to the underlying chorion; and each is closely enveloped by an amnion. The twin pregnancy is apparently of the monochorial (monozygotic, uniovular) type. If it had been originally dichorial (dizygotic, biovular), one would expect to find some persistent indication of secondary fusion of two chorionic vesicles at this relatively early stage of gestation.

The embryos are of quite dissimilar size; the smaller measures approximately 4 mm., the larger 7 mm. Macroscopically, the smaller appeared to lie on its back: a cephalic indentation was interpreted as the oral sinus. This orientation could not be confirmed in the sections. The abdominal organs had largely disappeared over the area of fusion. The larger embryo presented apparently its right side; branchial arches seemed recognizable at the larger end. The sections suggested that a

wrinkling of the tissue of the atrophic head over an area of fusion gave a deceptive appearance of arches. Both embryos showed indications of considerable distortion and malformation.

Sections of both embryos, including portions of the underlying blood clots, were cut at 8 microns and stained with hemotoxylin and eosin. The sections were prepared by Dr. Elizabeth Cole. No trace of a yolk sac appears in the sections. Only the larger embryo shows an attached fibrous structure, which may represent the primordium of an umbilical cord. Both embryos are fused over large areas with the underlying chorion. This fusion produces considerable flattening and distortion. The tightly fitting amnions are in part adherent to the embryonic ectoderm. Obviously the body stalks ceased early to lengthen, and the amnions similarly ceased to expand.

The two embryos are at slightly different stages of development. Estimated on the basis of length alone they are approximately thirty and thirty-six days of age, respectively. The microscopic appearance agrees in general with this age difference of six days. Assuming that we are dealing with monochorial twins, as the evidence seems to indicate, the smaller embryo is somewhat stunted in development. The larger embryo probably more nearly measures the maximum gestation time, namely, five to six weeks. It has suffered a considerable degree of disintegration and maceration. The degree of regressive alteration would seem to have required at least a week of post-mortem duration. On this assumption, the pregnancy has an age of approximately seven weeks, a figure which agrees closely with the clinical history and the histology of the chorionic villi.

The most conspicuous structures in the smaller embryo are the neural tube and the myotomes. Especially in the cerebral region is the neural wall distorted. The neuroblasts are in general dissociated and the cerebral canal is practically obliterated. Eyes cannot be recognized in this tissue. Over a few restricted areas in the head region of the smaller embryo the epidermis remains practically normal, and consists of two layers of cylindrical cells covered with a peridermal membrane of flattened cells. Elsewhere skin is apparently lacking. The mesenchyme appears approximately normal except for a variable degree of cellular dissociation. No mitoses occur in these tissues. The mesenchyme contains numerous small thin-walled blood vessels filled with normoblasts.

In the case of the larger embryo the nervous system is only vaguely indicated by an irregular canal filled with a coagulum and outlined by a layer of dissociating pale-staining cells. The head of this embryo has suffered almost complete atrophy. The salient feature of the larger embryo is a voluminous mass of large polyhedral cells, in certain areas separated by wide sinuses filled with normoblasts. This is clearly liver tissue. Several sections contain also a small irregular vesicle lined with quite healthy-looking cylindrical cells, suggestive of intestine. This embryo defies more precise analysis in terms of organs and tissues. Dissociation has proceeded to a degree where only liver, mesenchyme and fetal blood are interpretable with certainty. The underlying hemorrhagic mass contains an excessive number of polymorphonucleated leucocytes, indicative of the degree of the inflammatory process.

Besides adding one more instance to the rare condition of tubal monochorial twin pregnancy, this case seems of unusual importance in that the clinical history reveals the probable causative factor underlying human monozygotic twinning. This individual suffered from chronic appendicitis over a period of at least two years. It is significant that the tube on the right side was the locus of the twin pregnancy. It seems reasonable to infer that the inflammation surrounding the appendix spread to the adjacent uterine tube. An inflammatory condition of the tubal mucosa would operate to impede the descent of a fertilized egg, and thus provide the conditions for tubal implantation. The resulting "faulty implantation" (Mall; Contr. to *Embryol.*. Vol. 1, 1915, Carneg. Inst. of Wash.), imposing a condition of inadequate nutrition, coupled especially with the presence of a toxin resulting from the inflammatory milieu, would conceivably operate to temporarily arrest development at an early critical stage. The experimental work of Stockard (*Am. Jour. Anat.* Vol. 28, 1921) with fish embryos has shown that when development is interrupted at a stage immediately preceding gastrulation (formation of primitive streak in mammals) by lowering the temperature or decreasing the oxygen supply, and then restarted by a return to normal conditions,

the resulting embryos are largely various degrees of double monsters. Double monsters are essentially incompletely separated uniovular twins. The preponderance of tubal monochorial twins reported by Arey (1922) over uterine monochorial twins, approximately in the proportion of 15 to 1, may well be the result in part, as Arey has suggested, of the operation of the factor of inadequate oxygenation, or of a toxin, effecting an early inhibition of development under the conditions, chiefly inflammatory, which underlie tubal implantation.

DACRYO-CYSTITIS AND ITS TREATMENT—PAST AND PRESENT.*

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For at least several hundred years, the etiology of dacryo-cystitis has been a moot question with the medical profession, and much irrational treatment and many useless and painful operative measures have been devised for its cure. Not till the early part of the present century had it ever been suspected that nasal sinusitis was responsible for fully nine-tenths of the cases of dacryo-cystitis, as a result of extension of inflammation, by contiguity of tissue, from the maxillary sinus, ethmoid cells, or frontal sinus,—the two former lying respectively to the outer side and behind the nasal duct. The remaining cases are generally, directly or indirectly, of nasal origin, caused by repeated infectious inflammations extending up the nasal duct into the lachrymal sac and even through the canaliculi to the ocular conjuctiva. In this process, the nasal duct is more frequently occluded than any other part of the derivative lachrymal passages. This depends, in a measure, on the fact that, when the lining mucous membrane becomes thickened from inflammation, the lumen of the duct becomes closed, as no distention is permitted outward, by the bony canal in which it is encased.

However, it must be conceded that a few cases of dacryo-cystitis are produced by acquired or inherited syphilis, tuberculosis, scarlet-fever, measles and small-pox,—but a very few. Just how the nasal duct becomes permanently strictured is problematical; yet, it is believed that lymph being thrown out, both within and without the duct, and the periosteum becoming involved in come cases, hyperplasia takes place, resulting in not only an organized stricture of the membranous duct, but atresia of the bony canal as well. The stricture is usually found at the junction of the sac with the duct,—the narrowest part of the normal duct. The appearance of acute dacryo-cystitis and blennorrhoea, the chronic form, is too well known to need any lengthy description here. The disease occurs at any age, even the new born infant not being exempt. According to Nettleship, women are more liable to be afflicted than men, in the proportion of nearly four to one. An acute attack is frequently preceded by the chronic form, of some months' or years' duration. The first signs are usually increased lachrymation, a hard circumscribed swelling the size and shape of a horse-bean, in the situation of the sac, with great swelling and edema of the lids. The swelling is red and very painful to the slightest touch. The attack sometimes subsides, but, more commonly, it terminates in an abscess of the sac which points just below the tendon of the orbicularis muscle, as closure of the canaliculi and nasal duct from the inflammation makes drainage from the sac impossible. After nature has evacuated the abscess, relief from pain is pronounced, and, as a rule, speedy resolution takes place. Soon, the puncta and canaliculi become pervious and permit the passage of tears once more into the sac, which, mixed with purulent mucus, empty themselves through the fistulous opening on the cheek. By and by, the lining membrane of the nasal duct becomes healthy and a free passage for the tears into the nose is re-established.

In most cases, such a favorable termination fails to take place. The nasal duct remains obstructed, and, at times, permanently strictured, and the fistula will also remain, and a cure cannot be expected until drainage into the nose is effected by operative procedure. Blennorrhoea, or the chronic form of dacryo-cystitits, presents a milder and more inviting picture. Barring the danger of an acute attack of the disease, and the danger of the loss of the eye in case of an injury to the cornea from an infected ulcer, the troublesome tearing and the annoyance of constantly wiping the filthy pus from the eye, blennorrhoea might well be ignored, which is often the case with many people thus affected. A circum-

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scribed swelling over the site of the lachrymal sac, known as a mucocele, accompanied always with epiphora and usually with a chronic inflammation of the palpebral conjunctiva, and also of the ocular conjunctiva at the inner corner of the eye, are the objective signs. On pressing the sac, if mucus or pus fails to pass through the nasal duct into the nose, and only regurgitates into the eye, it is a strong indication that the duct is permanently strictured.

This causes the mucocele to temporarily disappear, but, as the puncta and canaliculi are patulous, the tears are readily transmitted into the sac, which becomes again distended. Blennorrhoea may come on quite imperceptibly, watering of the eye being the first symptom noticed by the patient. However, it may be preceded by one or more acute attacks of inflammation of the lachrymal passages.

Judging from the writings of the earliest authors, it is quite apparent that none of them appreciated the causes of dacryo-cystitis: 1 Srofula was regarded as one of the chief exciting causes and retarded its cure. 2. Another theory was that it was caused by an inflammation of the Meibomian glands and of the mucous surfaces of the eyelids; the discharge from both sources becoming mixed with the tears was carried into the lachrymal sac, and there set up an irritation of its lining, which brought about an inflammation of the entire drainage system of the eye. This inflammation finally produced a stricture of the nasal duct, resulting in an abscess of the sac, and this was usually followed by fistula lachrymalis. Scarpa was the strongest advocate of this belief, but there were many opponents of this fallacy. The reasons they assigned were—first. that they had observed the fistula lachrymalis without the least morbid alteration of the eyelids and Meibomian glands; second, that every purulent discharge of the eyelids, in fact, almost none of these diseases of the conjunctiva were ever succeeded by dacryo-cystitis and fistula lachrymalis; third, that the fistula was cured by means of an operation, without any attention being paid to the disease of the eyelids which was claimed to cause it. 3. The third cause of dacryo-cysititis, in the opinion of many, was that it was the result of an erysipelatous inflammation of the skin and cellular tissue over the site of the lachrymal sac, resulting in a superficial abscess, which, in unfavorable cases, perforated into the sac and produced all the signs and symptoms of acute dacryo-cystitis. It is far more probable that, what was thought to be the cause was really the result of an already existing inflammation of the sac.

Past Treatment

The old writers were a unit in believing that stricture of the nasal duct was the cause of the mucocele, abscess, and fistula of the lachrymal sac, and all of their efforts were directed toward the restoration of drainage into the nose. In the acute stage of dacryo-cystitis, cold applications were commonly used over the inflamed area. In some cases, hot fomentations were preferred. Blisters behind the ear and leeches to the corner of the eye and to the entrance to the corresponding nostril, were favorite remedies. When pain was very severe. venesection was generally practiced, while hydrarg. cum creta was the laxative of choice. An early incision was made into the sac, should an abscess begin to point,—thus affording quick relief from pain and diminishing the chances of multiple fistulae. After the acute symptoms had subsided, efforts were begun at once to restore the patency of the nasal duct, by introducing into it cat-gut and silver styles, by way of the fistula lachrymalis, where they were permitted to remain several days, after which they were replaced by larger ones,—the duct being syringed and cleansed each time. Anel devised his probe and syringe in 1716, and both were intended to be used only through the upper canaliculus, but, owing to the small size of the probe and the great difficulty of its passage through the nasal duct, it soon fell into disrepute, and little was accomplished of a curative nature with the syringe, as the solutions passed out through the fistula lachrymalis and not through the duct. Later, in blennorrhoea, Petit conceived the idea of making an opening into the mucocele, and dilating the nasal duct with bougies, with results about the same as in cases where the fisulous opening was used.

Prior to this method, Travers had used graded silver probes, five inches long, which were passed exclusively through the unslit canaliculi, with little or no benefit.

Others attempted to overcome the strictured nasal duct by introducing Gensoul's sound

from the lower meatus up through the duct. This was a very difficult procedure and only resulted in inflicting great pain on the patient, —however much it may have impressed him as to the interest and zeal of the surgeon,— and it speedily fell into disuse.

Others, discouraged by all the devices heretofore mentioned, resorted to perforating the lachrymal bone and establishing an opening from the sac into the middle meatus of the nose; but, this operation also proved a complete failure, because the fenestrated opening soon closed and the cystitis recurred. Finally, in desperation in obstinate cases, some made use of Dupuytren's and Wathen's gold tubes, which bore their names. These were inserted through the fistulous opening in the sac, or through an incision made for the purpose, down into the lower portion of the nasal duct, and the opening was closed with a suture or a piece of adhesive plaster,—the tube to be worn permanently. The tears were immediately and freely carried into the nose, and in a few days, the opening into the sac would close, and the patient was discharged as cured.

But, after some weeks or months, the tube invariably caused irritation and removal became necessary, or the bone surrounding the tube became necrotic and it would be extruded through the nose. Finally, some surgeons, surrendering to what they conceded to be an incurable condition, destroyed the lachrymal sac and nasal duct with escharotics,—a method practiced by the Romans 2000 years ago. Thus, they effected a cure by destroying the seat of the disease. The same execrable surgery is practiced by the lachrymal sac extirpator of today, in a more skilful and less painful manner, yet, with the still small voice of an accusing conscience ever telling him that he did not do all that he should have done for his patient. He did not perform a dacryo-cysto-rhinostomy, nor did he even recommend this operation which would have probably effected a cure. But, instead, he yielded to the importunities of an anxious patient for a speedy termination of the filthy disease,—a patient whose patience had already been exhausted by the useless and torturing probe, and who had ever been terrified at the possibility of losing his eye, with an infected ulcer, in case of an injury to the cornea.

Present Treatment

And now we come to the point where we must consider the treatment in vogue today, and see what improvement we have made over that of the old surgeons, which we have just reviewed. Owing to a better knowledge of the etiology of dacryo-cystitis, we have a better understanding of the pathological conditions we have to deal with, and are able to treat the disease itself with greater intelligence; at the same time, by removing the causes, we effect a speedier cure. They thought that a scrofulous diathesis was one of the chief causes of the disease, and retarded its cure; whereas, we now know that tuberculosis, syphilis, and nasal infections must be combated, along with drainage, before we can expect good results.

Owing to the fact that there are today ten times as many ophthalmologists and rhinologists as there were forty years ago, the number of cases of dacryo-cystitis *per capita* has slowly diminished as time went on, because proper and rational treatment became more accessible and its importance became more impressed on the laity. As a result, nasal sinusitis and infectious inflammations of the nasal passages are treated early, and the greatest common causes being removed, the disease itself is prevented. A larger number of dentists are now found, and with a better care of the teeth, we meet with fewer cases of maxillary sinusitis of dental origin.

However, where the disease is one of long standing, and an organized stricture of the nasal duct is found, with or without bony atresia, the present treatment of wearing styles, and cannulae, and probing through the slit canaliculus is just as irrational and unsuccessful as that of the old surgeons when done through the fistula lachrymalis or through an opening made into the sac,—for such a stricture can only be cured by a dacryo-cysto-rhinostomy.

Thirty-seven years of trial evokes this dogmatic assertion: When there is merely a thickened chronically inflamed condition of the mucous lining of the duct, and the case has been seen early, it is usually amenable to treatment. Such were the cases cured by the ancient surgeons, and these are the cases the ophthalmologist cures today with probes and irrigation.

Between the years of 1850 and 1875, the

lower canaliculus was first slit up into the lachrymal sac, and silver probes of increasing size were passed through the nasal duct, and styles and cannulae worn with less disfigurement. This route has other advantages over the old route, as opening the sac in this manner prevents a fistula forming in many cases, which is both disagreeable and unsightly. Besides, probing is more easily done and fluids are injected through the lachrymal passages with greater facility. Some ophthalmologists condemn cutting up the canaliculi,—claiming that it is conducive to the development of epiphora. Many believe this is a false assumption, and that capillary attraction is a theory rather than an essential factor to the drainage of tears. For, in cases of paralysis of the orbicularis muscle, though the puncta are in a natural position and in apposition with the globe of the eye, epiphora is always present. The tears are drawn into the sac by the action of the orbicularis palpebrarum and Horner's muscles squeezing the sac and forcing the tears down into the nasal duct. This produces a vacuum in the sac, which, in turn, draws the tears from the eye on the same principle that a rubber ball syringe acts,—the canaliculus being the nozzle. The ciliated epithelium which lines the lachrymal passages assists, to some extent, in carrying the tears into the nose, and gravity must also be considered. Hence, many think that as long as the nasal duct is open, there will be no epiphora,—although the canaliculi are slit.

To illustrate further, the dacryo-cysto-rhinostomy, which was reported by the author in the June *Laryngoscope* of 1925, calls for slitting the lower canaliculus and also cutting up the nasal duct into the lachrymal sac; yet, drainage was, and now is, perfect in every case operated, with not the slightest epiphora.

In an acute case of dacryo-cystitis with a painful and swollen sac, the lower canaliculus should be slit up freely into the sac, and same washed out with boric acid or normal salt solution, using a small smooth-pointed glass eye-dropper, the gum bulb of which is securely tied to the barrel. With this, the irrigating solution can not only be injected into the sac, but its muco-purulent contents can be sucked out, which, in some cases, is too thick to be expressed. This simple device will supplant the Anel syringe, if once tried.

Never attempt to pass a probe, after washing out the sac, for several consecutive days. By that time drainage may have been re-established, and probing the nasal duct will be unnecessary. By promptly opening the swollen sac, as above described, much relief will be experienced by the patient, and a fistula lachrymalis prevented. Should the nasal duct now remain impervious to the pressure of the injected solution, a few drops of a 10 per cent cocaine in adrenalin chloride solution, 1 to 1000, should be injected into the sac, and held under pressure for a minute or two. This should blanch and thin the lining of the sac and nasal duct to the extent of permitting an irrigating solution to pass into the nose,—if there be only a congestive obstruction. If the solution cannot be forced through, though considerable pressure is used, the chances are there is an organized stricture of the duct. Now attempt to pass a No. 6 or 8 Bowman probe,—not larger or smaller. If it passes easily, there may still be a thickened congestive occlusion. If it can be passed only with considerable force, there is probably an organized stricture of the membranous duct with possibly a bony duct atresia. Use probes, but never pass a canaliculus knife into the nasal duct in order to divide a stricture. It is unnecessary and as dangerous to the integrity of the duct as the passage of a knife into the male urethra to sever a stricture, without having previously passed a filiform bougie for a guide. A false passage is almost certain to be made, and a curable obstructed nasal duct converted into an incurable strictured one.

The same criticism can be made of large lachrymal probes. Where there is a slight stenosis of the bony canal, the attempt to pass a probe too large cannot but crush and injure the membranous duct against walls of the canal and invite an organized stricture. In these acute cases, you should encourage and invite drainage, rather than force it with heroic measures. In those cases where epiphora only remains, and no mucus or pus can any longer be found in the sac, yet, the thick chronically inflamed lining of the nasal duct will not permit normal drainage into the nose, although the irrigating solution may pass readily with the use of the syringe, and if a No. 6 or 8 Bowman probe can be passed without force and without any trace of blood on

its removal, the best treatment is to inject every other day, a few drops of a 2 per cent solution of nitrate of silver into the sac and nasal duct, and, in a few minutes, irrigate the sac and duct with a normal salt solution. Along with this, a Bowman No. 8 probe should be passed about twice a week. As a rule, this line of treatment will overcome the cause of the obstruction.

The best treatment for dacryo-cystitis in infants is masterly inactivity. Although about 1½ per cent of the new born have epiphora or tearing with a little mucus in one or both lachrymal sacs, virtually all get well in a few weeks or months with little or no treatment. It is thought to be caused by delayed absorption of the material which exists in the sac and nasal duct during foetal life, along with a probable bacterial infection.

Expressing the contents of the sac several times during the day, followed with a few drops of a sulphate of zinc solution, ½ grain to the ounce, and placing the child on its back so that the solution will remain in the corner of the eye, seems to hasten a cure. Should the case not yield speedily and the parents become unreasonably solicitous, the sac can be irrigated and a small probe passed occasionally through the dilated canaliculus and nasal duct.

In cases of chronic dacryo-cystitis of long standing—of more than a year,—with a mucocele which can be only emptied into the eye, and, with possibly a fistula lachrymalis as a complication, an incurable organized stricture is almost certain to be found.

The lower canaliculus should be slit up and the patency of the nasal duct investigated, as directed in the acute form, and, so soon as this fact has been established, there is no use to waste time in attempting to overcome the stricture. As before said, nothing but a dacryo-cystorhinostomy will effect a cure.

All operators who prefer to cure their patients of dacryo-cystitis, instead of mutilating them by extirpating the lachrymal sac, have quite a number of intra-nasal operations to choose from. None of them is as easy to perform as removing the lachrymal sac. Therefore, if they are considering themselves only, and seeking the way of least resistance, their own ease and comfort, and not the interest and ultimate well-being of their patients, they should never attempt one of these operations. Some are more difficult than others, and some too difficult to even be considered. But the one previously alluded to in this article, and reported in the June *Laryngoscope*, of 1925, is by far the easiest to perform and absolutely dependable.

V. Muller & Company, of Chicago, is prepared to furnish the special instruments to the profession at very reasonable prices.

Complete stenosis of the bony nasal duct is rare. But when it occurs as a complication of dacryo-cystitis, the West intra-nasal operation, or one of its modifications, can be performed, or, preferably, the bony stricture drilled through from above, and the Hanger operation done,—but never a dacryo-cystectomy.

It is to be sincerely hoped that should one of you be tempted to extirpate a lachrymal sac, you will first arraign yourself before the bar of your conscience, and ask yourself whether you would prefer your own lachrymal sac to be removed, in preference to having it remain and the tears made to drain once more into the nose,—and then do for your patient what you would have done for yourself. This is what you owe to your patient, to yourself, and to the great medical profession of which you are a member.

And when the long day's task is done and you would rest, there will be no rack of regret to torment you, no spectre arising which will not down at your bidding, and cause you to exclaim, like the craven Macbeth,—"Thou canst not say, I did it: never shake thy gory locks at me."

HEART PAIN.*

By F. H. SMITH, M. D., F. A. C. P., Abingdon, Va.

I suppose there are fifty men in this audience. If there are no more than this, and if the law of averages holds, nine of you will die of heart disease, not including those who will die of the results of arteriosclerosis. Cancer will claim only five of you; Bright's disease four or five; pneumonia three; and so on. This rather lugubrious prediction assumes that the present mortality rates will remain fixed—a rather doubtful assumption, as all indications are fairly clear that the mortality rate of the cardio-vascular diseases for men of the age-

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periods of most of us is increasing disproportionately. In the last generation we have been saving more babies, but we have been losing as many, even more men in the most productive period of life, between 40 and 60. In view of such facts, there need be no apology for discussion of any phase of the problem of the circulatory diseases.

Pain and breathlessness, either or both, brought on by exertion or stress are among the earliest and most frequent symptoms of heart disease. Either symptom marks the progress of the failing heart throughout all of its downward stages. It is of pain, however, as a symptom of heart disease that we are thinking especially at this time.

It shall be my endeavor to present as practical a clinical paper as my subject permits. But I must pause long enough to remind you that the heart as a functional unit consists essentially of its muscle by which its activities are carried on, and of the coronary vessels and nervous mechanism by which the muscle is nourished and its activities are regulated. The nervous control is maintained by the action of the vagus and sympathetic nerves. These nerves have a wide distribution to viscera other than the heart, and through this wide visceral distribution many referred pains are explained. In the heart these nerves are distributed to the sino-auricular and auriculo-ventricular nodes, and are reflected up over the root of the aorta. Efferent or motor fibers appear not to pass beyond the nodes; afferent or sensory fibers are assumed to pass to auricle and ventricle. Sympathetic-nerve action enormously increases activity; vagus action depresses or inhibits activity, even to cessation of all activity. This is the motor response to stimulation. The sensory response to stimulation is that sensation which we perceive in consciousness and express as pain. The receptor and effector centers of this reflex arc are in the spinal cord between the lower cervical and upper thoracic segments.

Our first impulse is to divide heart pain into intrinsic and extrinsic conditions. On further thought, it is doubtful whether this division will hold. How, for instance, under such a simple arrangement, will we class the case of the young individual dying suddenly in the grip of a gall-stone attack; or the occasional instance of instant death on pleural puncture, with healthy hearts? Here the irritation was extrinsic, but death must have occurred by way of the nervous mechanism of the heart.

Perhaps a less objectionable, though admittedly arbitrary, approach will be an attempt to separate out, first, those conditions which may cause an imitation of cardiac pain.

No useful point can be served by attempting a complete list of any of these conditions. My purpose is to suggest rather than to exhaust the possibilities.

Under the head of the imitations of heart pain may be included a very large and varied group or a relatively small one, depending upon how loosely or tightly we apply our definitions. I suggest that we limit the term here to those pains which may be regarded as cardiac, at first sight at least, and yet, on analysis, we are satisfied have nothing to do with the heart, certainly in any direct sense. In effect, this leaves very little to discuss except the so-called "pseudo-anginas."

Again, we run into the practical difficulty of definition. There is no agreement as to the content of the pseudo-anginas. For one, the term means any condition causing genuine pain referred to the heart or precordium, for which there is a real cause not located in the heart. Intercostal neuralgia, and the pre-vesicular stage of herpes zoster are examples.

I once saw an old man who presented a rather striking picture of true angina. Some fever, leucocytosis, suppressed painful breathing and hiccough were odd factors. A patch of left basal pneumonia resolved the doubt in favor of pneumonia and diaphragmatic pleurisy, with phrenic-nerve pain referred to the precordium, the base of the left neck, and down the left arm rather than to the base of the chest.

Painful affections in the distribution of the vagus nerve to the viscera of the upper abdomen much oftener cause confusion. The pain of gall-bladder disease, perforated ulcer, acute pancreatitis, high mesenteric occlusion, even of kidney colic, can just as readily occur about the precordium as heart pains can be referred downward to the upper abdomen. One of the nicest and most momentous problems in emergency diagnosis can arise when confronted with such a differentiation.

Another application of the term "pseudo-angina," frequent and recognized by high

authority, but nonetheless reprehensible, is to the neurotic cardiac group. To list this type of case as a "clinical variety" of true angina, as some text-books do, sometimes embarrasses the clinician when he appears as a court witness, and works incalculable harm to the patient. The laity associates heart disease with sudden death, angina with terrific pain and inevitable death. To pronounce a verdict of "pseudo-angina" upon this neurotic individual, usually young and imaginative, presents to the eye of the victim the picture of the only angina he knows of. Little difference it makes to him whether it be "false" or "true", if he has "angina!"

I wish this term could be dropped from medical literature. Potain has said, "There are no false diseases, there are only false diagnoses."

We come now to consider the true cardialgias, pains which we have every reason to believe originate in the heart, its coronaries, or in the root of the aorta.

Practically every organic disease of the heart may have some degree of precordial pain or discomfort. In the majority this discomfort hardly approaches the degree of pain that can be called severe; it is not usually the most prominent or urgent symptom; nor is it so clearly associated with physical exertion or mental stress as to seem dependent upon these factors. Of this ill-defined character is the pain or discomfort of the myocardial diseases and degenerations, whether primary or secondary to valvular defects; of hypertrophy; or pericarditis, and some others. We expect to arrive at a diagnosis in such cases, not so much on the quality and distribution of the pain, as on the associated subjective and objective evidences of heart disease.

On the other hand, there is a distinct group of cardialgias in which pain is the outstanding, urgent and important symptom of the malady. In this latter group the diagnosis depends upon the recognition of the character of the pain, its quality, location, radiation and the presence of those peculiar mental and physical reactions thereto, all of which we include in the concept of angina pectoris, or, more exactly I believe, the anginal group of heart cases.

It is with this group that we are most concerned in a discussion of heart pain.

In 1768, Rougnon, and, about the same time, Heberden, described cases of angina pectoris. Heberden called this clinical syndrome angina because of the choking, strangling, throttling character of the pain. Ever since, this disease or syndrome has been a bone of contention among clinicians and pathologists. To this day there is no agreement as to the immediate cause of the pain. Huchard, for instance, found sixty-four explanations of angina in the literature, and this confusion exists in the most authoritative texts of today.

In the vast majority of patients dying after one or many anginal attacks some structural defect can be demonstrated. In many this defect is an area of myocarditis, whether more or less generalized or only in spots. More frequently, a segment of aortitis is found, involving the aorta as it springs from the heart, and the mouths of the coronary vessels.

Vaquez finds the explanation of anginal pain right here, namely, in the areas of myocarditis or of aortitis so generally demonstrated. He says that the muscle of the heart and of the aortic ring have the same muscle sense that all muscles have. The pain of angina is the pain of sudden distention. It is an exalted muscle sense that occurs with sudden distention, exalted because of the inflammatory changes at the points designated. He compares this heart pain with the pain of sudden distention of the urinary bladder. How much more likely, then, is pain upon distention of the diseased segment of the aorta or ventricle in which that quality of healthy muscle which we call tonus has been lost or reduced?

In about one-third of the cases which come to autopsy the coronary vessels themselves are healthy. A great many cases, on the other hand, show definite sclerosis or atheroma of all or part of the vessel. Until very recent years it has been the universal custom to regard cases presenting coronary changes as simple angina. Pathologists have recognized them, but it was believed that there is no way by which they could be distinguished during life from angina without occlusion. Now, coronary occlusion, with or without thrombosis, producing myocardial infarction, is recognized as a clinical entity. This is of more than academic interest both from the standpoint of diagnosis and of prognosis.

Herrick divides cases of coronary occlusion into four groups; or we might say that cases

are divisible into groups depending upon the size of the vessel occluded. In the first group are the cases of instantaneous death, in which there is no death-struggle, the heart-beat and breathing stopping at once. I have the notion that death in this group of cases is more nearly instantaneous than any we know of, and that it is the cause of sudden death oftener than most of us realize. In them the main trunk of the coronary is completely occluded.

In the second group death comes within minutes or a few hours. These patients, too, are found dead, or are plainly in the death agony when the doctor reaches them upon a hurried call. The occlusion usually occupies the branch supplying the left ventricle.

The third group comprises cases that survive for days, even months, and then die perhaps with evidences of ordinary myocardial failure; or they sometimes seem to recover. In these last cases we must assume that one of the smaller branches is occluded and that the rather precarious collateral circulation has fortunately become established.

Finally, there is the fourth group, the mildest cases, in which we can only suspect an obstruction of one of the smallest branches. In them the precordial pain is slight, perhaps so slight as to pass unrecognized. Yet at autopsy healed scars of old infarction are demonstrable.

The pain of coronary occlusion of the second and third groups seems to me to be the most atrocious and difficult to alleviate known to man. This is in itself suggestive of occlusion. Given a man in the senescent age, with substernal or precordial agony not promptly or completely relieved by nitrites nor even by extraordinary doses of morphine, coronary occlusion is probable. The pain may radiate into the neck or down the arm, but is more apt to radiate into the upper abdomen. Herein lies a real danger. The patient frequently shows a degree of shock comparable with that of perforation. If he survives a few hours, he usually develops a little fever and more or less leucocytosis. The pain by no means depends upon exertion either for its inception or for its increase, but may develop in sleep; and, also unlike angina, its duration, unless death supervene, is measured by hours or days instead of by moments.

Should the patient with coronary occlusion survive the first twelve or twenty-four hours, it is not unusual to find a small patch of pericardial friction. This spot of pericarditis overlies the area of myocardial infarction, and may explain the fever and leucocytosis. But it, too, is liable to lead one astray by suggesting simple pericarditis. The absence of friction rub, by the way, should not negative the diagnosis of occlusion, as it may have occurred at an inaccessible part of the heart.

After one or more days, symptoms of myocardial failure may ensue to further cloud the picture. An enlarged heart, dyspnea, basal rales, or a swollen liver may be present, and the patient succumb as an ordinary congestive heart case. The previously healthy heart is the one more apt to recover, other factors being equal, whereas the older, previously damaged myocardium is more apt to succumb.

I have spent much time discussing coronary thrombosis and other structural diseases of the heart or vessels, because these constitute the larger part of the whole anginal group. It must be admitted, however, that occasionally the autopsy will reveal no sufficient cause for what has been regarded as the typical symptom-complex of angina during life. Another disquieting item is the more frequent fact that patients who clinically and pathologically display evidences of undoubted structural disease may never have had pain which by any stretch of imagination could be called anginal.

If such be facts, the question at once occurs to mind: Is an organic lesion directly responsible for, or necessary to, the occurrence of anginal pain?

Before answering this question, I should like to mention several conditions of heart pain, and raise the question of their nature.

Certain of the toxic states give rise to pain. I mention tobacco with some hesitation, as it is still a moot point whether tobacco causes true angina. At least, it seems generally conceded that even if tobacco does not cause angina, it may provoke attacks when conditions are favorable.

We know that the convulsions of puerperal eclampsia are sometimes ushered in with violent epigastric pain, and that impending diabetic coma may be mistaken for an abdominal emergency. I once saw a lad go into diabetic coma with thoracic pain which, in an older man, might very readily have been called an-

gina. Upon coming out of coma, when his blood sugar was practically normal, he had no further pain.

I know a young doctor of clean habits and past history, except that he had pneumonia several times in childhood. He has soft peripheral blood vessels, and has never had syphilis. During his senior year in medical college he developed typical attacks of angina, confirmed by several experienced physicians who saw him in attacks. Examination, including electrocardiographic studies, were negative for explanation of this pain, or in detecting evidence of heart disease. Yet his attacks continued. They were associated with a pronounced rise in blood pressure, which would subside after the attack. Finally, he became convinced that he had an abscessed tooth, and had it extracted. Since then, some seven months ago, he has had no further attack. In the meantime he has had an acute attack of tonsillitis, and has submitted to tonsillectomy. He has had a rather strenuous time as a hospital interne, with irregular periods of sleep. He has not greatly or systematically limited his physical exertion.

Has this young man angina pectoris?

Or, recall the occasional victim of toxic goiter who, in addition to the usual heart-hurry, has distinct attacks of anginal pain, with or with fibrillation, and in whom the attacks disappear after the thyroid has been brought under control.

I mention also the anginal attacks of women of the menopausal age, and of the obese individual with or without elevation of blood pressure. We can all recall patients in whom the only explanation of anginal pains forthcoming was grave anemia.

Here we have mentioned a variety of conditions in which cardiac pain may be the only common bond. I suggest that this pain is analogous, if not exactly similar, to the pain of simple angina. This suggestion entails the belief that they have analogous or similar causes.

It is a well known fact that some cases of angina live through many attacks. A few seem to recover entirely. Other cases pursue a steady downward course. Wherein is the difference?

I believe it is not necessary to assume structural disease of the heart or vessels to explain the pain of angina. If such structural disease be present, it acts as a complicating factor, and adds its quota to the gravity of the case. I believe it is rarely the case that one dies in a strictly uncomplicated attack of angina; hence, the rarity of occasions to see such a heart. But what of the cases now living who have had attacks for five, ten or fifteen years?

In some of these cases, undoubtedly, Vaquez' hypothesis of intraventricular and aortic pressure seems best to fit the case. I am thinking especially of the attacks that occur in sleep. The ventricle is surprised, as it were, by sudden distention of its chamber. In the main, however, I fall back on the conception persented by Sir James Mackenzie. He reminds us that if the healthy youngster runs as fast as he can far enough, he will have a sense of constriction through the chest, followed by pain in his heart. This is to all intents and purposes an attack of angina. In this normal youngster, however, the pain must be an expression of a tired or exhausted heart muscle. He, with his healthy heart and with full reserve capacity with normal muscle tonus, will promptly and perfectly recover.

If the normal heart of the youngster expresses pain upon over-strain, it is reasonable to assume that the over-acting thyroid heart, the strained heart of the obese, that of the menopausal woman with her vasomotor imbalance, the anemic heart undernourished by the poor blood quality, and the heart of simple angina pectoris with hypothetical vaso-constriction of its coronaries, will likewise express fatigue in terms of pain. This will occur even more readily, with the less added factor of strain, than in the case of the normal youngster. The cause of exhaustion of the myocardium may vary; the fact of fatigue is common to all.

If this reasoning be admitted, then it is easy to understand that the pain occurring in a diseased heart is also an expression of fatigue.

In a final word, I believe that a more or less typical attack of angina occurs rather frequently, with no evidence of organic heart disease; and that many of these cases recover. I believe that in these cases any organic disease present or developing later is a complicating factor, lending gravity to the prognosis. What

an argument, this is, for getting rid promptly of all those infectious and other factors which induce oganic heart disease!

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SOME PROBLEMS IN THE MANAGEMENT OF CERTAIN ACUTE INFECTIOUS DISEASES.*

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Two factors seem to us to have chief place in justifying the presentation of the material and impressions which follow,—first, the frequency with which we meet the conditions which we shall mention and their serious nature, and, second, our conviction that constant attention to certain details will greatly increase our efficiency in handling them. It is likely that the matters which we shall present are already familiar to all, in their general aspects, but, as we, among ourselves, derive much benefit from frequent discussion of our more common problems, we shall risk presenting some of these problems for your consideration at this time, hoping that we may add at least a little something to our mutual store of fact and theory upon which we must depend for their solution.

We have chosen a list of diseases, each of which is the subject of a large and rapidly increasing literature and any of which might still be considered as merely touched upon if we spent a long session in its discussion. Certain special features stand out, however, in this literature and in the studies which it represents, which it may be permissible to recall or emphasize, either because of the comparative infrequency with which we are called upon to reduce them to practical application, their relatively recent discovery or development, or their more or less uncertain position in the minds of many who have studied them.

We would urge, and continually re-emphasize throughout any discussion of the infectious diseases, the importance of the general examinations and therapeutic measures which so regularly and routinely form a part of the management of other forms of illness. The specificity of the group of conditions in which we are just now interested and the increasing application of specific forms of treatment seems not seldom to tend to submerge or eliminate the well established procedures upon which the efficiency of the specific measures themselves may, in the last analysis, depend.

No specific antitoxin, vaccine or chemical will take the place of nourishment or of a plentiful supply of fluid, and the mere neutralization of a specific toxin may be of little avail if the elimination of other toxins retained as the result of serious renal impairment is not assured or an effort be not made to protect and restore the efficiency of a badly burdened circulation. An appropriate chemical examination of the blood and constant consideration of the state of the circulation are no less important in the case in which we may happen to employ specific treatment than in those in which more general measures may be our sole reliance. We mention the importance of regular and frequent examinations of the urine merely that we may not be accused of seeming to disregard it. In this connection, it would seem that the quantitative method of measuring the albumen, as devised by Exton, has a very distinct value.

Of the so-called general blood examinations, the enumeration of the leucocytes and the differential count are of first importance, and they may, in themselves, not only assist in determining the course of the illness, but they may show that the scarlet suspect is in reality a victim of influenza or measles, or they may prevent the admission of a patient, suffering from measles or German measles, to the scarlet fever ward, in which, if he be susceptible, he may add more serious trouble to that with which he is already burdened.

Two articles, one by Dr. E. C. Rice, published in The Virginia Medical Monthly, February, 1927,[1] under the title "Blood in Scarlet Fever" and one in the last number of the *Medical Clinics of North America*,[2] by Dr. Elizabeth Bass, of New Orleans, give concisely and fully the behavior of the leucocytes under many conditions, including the significant rise of the eosinophiles in scarlet fever and the almost constant rise in the absolute leucocyte count following the use of antitoxins prepared from animal sera. The recognition of this last point is evidently necessary for the proper evaluation of the blood study under the circumstances of our present discussion. The red cell count and hæmoglobin determination are

*Read before the Alexandria Medical Society, May 1, 1928.

likewise essential as signals for the adoption of special measures to restore them to their normal level or to protect them from serious lowering, when possible. Transfusion, with proper regard for contraindications and with due consideration for the possible benefits of selecting an immune donor, may be life-saving, not merely by restoring a lowered red cell count or hæmoglobin value to normal, but also by neutralizing toxins, acting as a bactericidal agent, or by the exercise of properties which, while generally recognized as clinically beneficial, are not susceptible of strict qualitative or quantitative analysis and explanation.

Passing from the more general consideration, we will refer briefly to several diseases of the group of infectious and so-called contagious diseases. With regard to diphtheria, it would seem appropriate to preach toxin-antitoxin prophylaxis, in season and out of season. Upon it depends, without the shadow of a doubt, the control of diphtheria. And it must be emphasized that this is not an emergency measure to be adopted as a protection in time of individual exposure or epidemic alone, but, as early as possible, as a measure anticipating numerous and unknown exposures, by months or years. Inseparably associated with the problem of active immunity against diphtheria is that of the Schick test. Many are of the opinion that at least in the young, this test is not necessary before the use of the toxin-antitoxin mixture, believing that it is safest to administer the prophylactic to all from six months to young adult age. We are inclined to favor the premliniary test, and believe it should certainly be performed on all above six years of age, but, whether this be employed or not, it is essential that a test be made at an appropriate time after the attempt to establish immunity. Obviously, if the necessity of this step is accepted, it is most important that the potency and uniformity of the material used be assured as far as possible. It is true that the Public Health Service takes great precaution to see that standardization is as effective as possible, but no agency can follow the Schick test material from the laboratory of the manufacturer to its final administration to the subject. In our opinion, the performance of the test in as large groups as possible is one of the most certain means of detecting variation in the potency of the toxin-antitoxin mixture, each group thus containing an adequate series of controls.

The vexing question of the carrier is continually cropping up in connection with diphtheria. The wide spread application of active immunization, the judicious use of virulence tests and frequent bacteriological examinations are all measures which have a significant bearing upon this complex problem. The fairly common occurrence of diphtheria bacilli or diphtheriod organisms in nasal discharges, the exudate from mastoid wounds and in material from other sources not ordinariiy associated in our minds with this infection, too often, by their serious consequences or by causing unnecessary anxiety or inconvenience, demonstrate how much may be lost by neglect of the procedures just referred to. The advent of toxin-antitoxin prepared from goat serum marks a distinct improvement in the situation, inasmuch as it will make possible the safe immunization of those who may be sensitive to horse serum, and will eliminate the danger of sensitizing many to horse serum who might, subsequently, require serum for some other disease.

Measles, so often referred to as "just measles", but looked upon by the physician as one of the most dreaded of the diseases of childhood, seems in a fair way to be deprived of some of its alarming features. The work of Degkwitz,[3] of Germany, a work which he has carried on in this country following his original researches abroad, seems to have developed many points of interest and value. The work is most suggestive in regard to the identification of the etiological virus, which he believes grows in symbiosis with certain forms of streptococci, in which he includes the type held by Tunnecliff, to be the organism of measles. He holds, with Hektoen, that the virus is filterable and present in the blood and that by special cultural methods it may be propagated and its potency to produce measles may be demonstrated, after many generations, by injection into humans and monkeys. It is striking to note that the blood of monkeys which have not been injected does not protect, while that of monkeys which have been injected with the virus does protect human subjects from infection. His work has revived and encouraged the idea, first developed in the 18th century, that blood from convalescents will protect susceptibles from infection and it would appear

from the experience of a number of men that 20 c.c. of whole blood, even from one who has had measles many years before, if injected intramuscularly and sufficiently early, will protect against or modify the results of infection. Our experience has been extremely limited, but is distinctly in line with the belief expressed above, and which is strongly favored by some who have had opportunity to observe a considerable number of attempts at prophylaxis.

The results which apparently deserve to be classed as favorable are obtained from administration of immune blood between the sixth and ninth days after exposure. The blood of the mother is generally safest from the standpoint of possible specific infection and generally represents immune blood. The drawing of 20 c.c. to 30 c.c. of blood from the vein and its injection in the buttock may readily be accomplished by one who has had experience in such work.

Efforts are being made now to produce an immune serum which will be available for treatment of the established case, but to date the progress has not been encouraging. In a patient suffering from a severe attack of measles, the use of transfusion from an immune donor may logically be employed, though, if presumed to be helpful, an analysis of the special factors to which benefit might be attributed would be difficult.

The remarkable work which has recently been carried out in the study of scarlet fever is of special interest, not merely from a scientific standpoint, but particularly because of the promising outlook in the management of the disease. The demonstration of the relation of the streptococcus haemolyticus to scarlet fever has led to intensive study of the whole group of streptococci, with the development of many new facts and theories which will almost certainly prove to be of inestimable value in connection with other conditions. The recognition of the essentially toxic nature of scarlet fever, so often hinted at by the observation of many points of similarity with diphtheria,—and on several occasions suspected, only to be forgotten when attempts to put the idea to practical use did not fulfil expectations,—has been most significant. The Schultz Charlton blanching test was probably the most important single factor in breaking the deadlock in the study of this disease and has acquired a real value both in diagnosis and in the determination of the suitability of a given antitoxin to an individual patient.

The Dick test, we believe, has also earned an important place in the study of scarlet fever, and in controlling the disease. What we stated with regard to the Schick test in connection with diphtheria, we would repeat with regard to the Dick test, particularly emphasizing the additional assurance of safety by the arrangement of subjects for the test in groups, for the purpose of including controls in each series. It has recently been graphically demonstrated that only concentrated toxin should be kept in storage and that dilutions should be made at frequent intervals if uniformity is to be expected, or at least this plan should be followed until a uniform potency of diluted material, within the fixed time limit and under market conditions can be assured. Our conviction that the Dick test is of practical value is based upon our experience that we have never seen a case of scarlet fever in one who has been clearly demonstrated to be Dick negative, our observations having included many nurses tested and later sent on duty to the scarlet fever wards. On the other hand, we have seen numerous individuals, demonstrated to be Dick positive, who have contracted the disease or who, being positive at its onset, have become Dick negative as the disease progressed. It is emphasized that we have used the expression "clearly demonstrated to be Dick negative" and our reason for this is made plain by reference to a series of comparative tests carried out following atypical group response (P. H. and Commercial—dilute see Table I). Although there is much discussion as to the nature of reactions, such as the Schick and Dick tests, we cannot avoid the belief that for practical purposes they are tests of susceptibility or immunity with relation to specific diseases.

TABLE I.

COMPARATIVE DICK TESTS WITH FRESHLY PREPARED AND COMMERCIAL DILUTED TOXIN.

Tests Made in January, 1928.

Freshly Diluted Toxin from U. S. P. H. Service.

Number tested	U. S. P. H.—Freshly diluted		Commercial—Ready diluted	
93	Positive	24	Positive	9
	Negative	69	Negative	82
Negative with U. S. P. H. and positive with commercial dilute				1
House staff Dick negative individuals with commercial dilute, developing typical scarlet fever				3
Cases of scarlet fever in Dick negative individuals (U. S. P. H. Toxin)				0

The above group of 93 entirely nurses. Relatively small number of positives explained by fact that many had previously been given immunizing toxin or vaccine.

Artificial immunity has been attempted by three methods: (a) antitoxin, (b) vaccine, and (c) toxin. As for the use of antitoxin for this purpose, we are opposed to it, except in a very few instances. The protection afforded is of such uncertain and, most likely, of such brief duration, that its use can only lead either to a false sense of security, to be followed by disillusionment with the appearance of scarlet fever when the brief immunity has disappeared, or to interference with the production of really effective active immunity.

An example of a possibly justifiable exception to this rule against the prophylactic use of the serum is the case of a woman who, almost daily expecting to be delivered, had for a number of days assisted in nursing her husband during an attack of angina which, only at a late stage, was recognized as scarlet fever. The expectant mother was shown to be susceptible by the Dick test and her presence in a hospital obstetrical ward was pointedly stated to be undesirable. We felt that inasmuch as she must be delivered, to all intents and purposes, in a scarlet fever ward, it was proper to use every means to establish and maintain immunity even though for only a few days. Of course the fact that the delivery was accomplished with no bad effects does not prove that the antitoxin saved the life of the mother, but it must be admitted that the patient was in most precarious position.

Although, for some time we used the ricinoleated vaccine of Larsen, we have come to the conclusion that the percentage of successful immunizations in susceptibles is not as great as with a sufficient amount of toxin.

We have, therefore, returned to the use of the toxin injections for the establishment of active immunity, giving injections in graded amounts, the total being about 95,000 skin test doses ranging from 500 to 60,000 skd per injection. The therapeutic application of the antitoxin is the subject of wide difference of opinion. The rash extinction test and the presence of the rash which is blanched, the response to the Dick test with material prepared from what appears to be a specific strain of streptococcus, the graphic demonstration of the power of the antitoxic serum to neutralize this toxic substance, and the whole clinical picture as represented by serum treated and untreated cases, seem to be sufficient evidence that we are dealing with no less clearly toxic conditions and antitoxic substances than in the case of diphtheria. Whether, in the Dochez type of serum we have an additional bactericidal property, seems not quite so clear, but it is well to bear the possibility constantly in mind in those conditions in which actual bacterial invasion of tissues near to or remote from the original focus of infection may take place. In April,[4] 1926, we reported our analysis of a number of cases of severe type to whom serum was given, and expressed the opinion that they were materially benefited in respect to general condition. Moreover, there was a definite shortening of the period of fever. But, of chief importance, there was a considerable lessening of the frequency of serious complications. Few patients die of scarlet fever: those who die following the onset of this disease do so from the effect of the complications. One of our chief concerns, then, while we recognize as of immense benefit any measure which will alleviate the distressing early acute symptoms, is with the hope that this early evidence of the efficiency of antitoxin in reducing the frequency of complications will—by further studies—measure up to expectations. A preliminary survey of the series of patients treated and untreated during the present series indicates that our earlier impressions of the favorable effect of the antitoxin will be confirmed.

In our former report we urged the advisability of using large doses of serum at as early a date as possible to insure the complete binding of the toxic substances by the antitoxin before the former should become fixed in the tissues. We would emphasize this point again, for we believe much of the prejudice against the use of antitoxin is due to inadequate and too late injection. Much discussion has arisen about the frequent occurrence of urticaria, and we have found the condition frequently annoying. It would be unfortunate if this circumstance, which is by no means confined to the use of this particular preparation, should be allowed to obscure a real and compensating benefit. In the occurrence of this distressing condition there would seem to be rather an additional argument in favor of the establishment of active immunity than the appropriate

use of passive methods. Much attention is being given to the problem of the various forms of "serum reactions or serum sickness" both from the standpoint of prevention and treatment. As regards the first phase, special consideration is directed toward comparisons of products of different manufacturers, and of different lots of the product of the same manufacturer, while the mainstay of treatment seems to be adrenalin. Ephedrin and lately ephedrin with calcium have been used, though, as far as we have been able to determine, there is little evidence that these preparations are definitely more effective than adrenalin. It is our plan to study these more intensively during the next season if the need for them is apparent.

We would also urge the precaution of testing for sensitiveness to horse serum by injection of a small amount of the antitoxic serum in the skin before administration of the therapeutic dose, and of having on hand adrenalin solution for immediate use in case of need.

We cannot leave the discussion of this disease without reference to the matter of quarantine and to urge the study of the bacteriology of discharges and of the throat in every instance in which special local lesions may suggest the necessity of unusually prolonged confinement. We do not believe we can justify the discharge of patients who almost certainly carry with them active specific streptococci and, at the same time, confinement of others because of the gross evidence of a discharging sinus, the contents of which may readily be shown by repeated cultures to be entirely without specific relationship to the disease.

We have become rather accustomed to the idea that epidemic meningitis has been brought under much better control since the advent of the Flexner serum, and the evidence amply justifies that belief. But, observations in a number of cases about a year ago brought clearly to our attention the fact that situations may arise in connection with the disease in which more than the mere administration of serum as it comes to us from the market may be required. Several cases occurred, notably in Italians, in which there was an apparent rapid improvement, to be followed by a prolonged downward course of a number of weeks, ending in death. In our efforts to relieve these patients, several special considerations presented themselves and led to special investigations, particularly in connection with one of this group. First, we became more and more impressed with the fact, as indicated by tables representing agglutinating tests made by the Public Health Service, that we were dealing with a strain of meningococcus, not falling sharply within the accustomed groups or types and, therefore, quite likely to be not definitely amenable to the antibactericidal effects of the sera at hand. On the basis of this study, we sought specimens of serum which, when directly tested against the organism obtained, might seem to be the most effective. In our search, the blood of the patient himself and that of a subject believed to have had epidemic meningitis some years before, were titrated and the preparation of vaccines and specific serum by injection into rabbits was undertaken. Our efforts were not successful so far as this case was concerned, but we are firmly convinced of the importance of early studies of the relation of the serum being used in a given case to the specific organism and the early production of autogenous materials from the specific organism when either laboratory or clinical data indicate that the early results have not been favorable or that the prognosis is not satisfactory, as based on daily observation.

In our consideration of meningitis, we are apt to forget that even in the epidemic form the infection is certainly in a large percentage of instances, and probably in many more, a blood stream infection as well as an infection of the central nervous system. With this fact in mind, it is our regular custom to give early intravenous injections of serum in every case. The employment of lumbar puncture and the administration of serum by the lumbar route is universally recognized. A great deal of discussion has recently centered in the matter of cisterna puncture in the treatment of meningeal infections, and the evidence is clear that in cases of block this procedure may prove life saving and should invariably be used. There is also a growing conviction on the part of many that this procedure is indicated as a routine method of introducing serum most effectively to all parts of the meningeal covering of the brain, and particularly of reaching the basilar regions. The work of Ayer and others tends to develop considerable doubt as to the extent of distribution and the concentration of serum in the cerebral area when

given by lumbar puncture alone. It is imperative that cisterna puncture be available under the special conditions indicated and it is certainly advisable in those conditions in which satisfactory progress is not being made, a situation possibly due to unsatisfactory drainage, the inadequate local application of serum, or the necessity of using serum of low potency against the organism with which we may happen to be dealing.

We have assumed in this discussion that the diagnosis of the epidemic form of meningitis has been established. The difficulties of differentiating between this and other acute forms of central nervous disease infection may, however, be very great. The organism is not always abundantly intracellular; other organisms, notably the streptococcus, in smears or early cultures, may closely resemble specific diplococcus. The gonococcus, rare as it may be in this class of disease, may be distinguishable only by careful agglutination tests. The entire absence of organism and the characteristic cellular picture in the fluid is the not uncommon finding upon which the need for specific serum treatment may be based. The fact that there is available a form of therapy particularly appropriate to the epidemic infection must not obscure the fact that the pneumococcus and, rarely, probably other bacterial invasions, have yielded to persistent drainage of the cerebrospinal canal and the application of suitable measures for the clearing up of local lesions which may be the source of the invasion. That patients suffering from these infections are imperatively hospital patients, goes almost without saying.

In none of the infectious diseases is there more reason for our interest at this time than in the group designated by the name encephalitis, or poliomyelitis, or by a combination of these. Dr. Flexner, in his Kober lecture for 1928 at Georgetown University, emphasized the fact that it is more than barely possible that we may be faced with an epidemic of serious proportions in the near future. Nothing could be more inspiring than the work which has been undertaken under Dr. Flexner's guidance in the study of this disease, even though, unfortunately, much is left to be desired in the way of answer to the problems involved. But certain facts of importance have been developed, which should be kept clearly in mind in the management of our patients.

The main reliance must, at this time, be general measures, the judicious use of spinal and cisterna puncture both for diagnosis and treatment, and the use of convalescent or immune sera. Dr. Flexner pointed out that there is a very strong indication that animal sera prepared today as antipoliomyelitic or antiencephalitic are not only not specific but that their use may distinctly unfavorably influence the course of the disease. With recovered human patients, then, as the one source of supply, and probably our one specific therapeutic agent, the necessity is evident of discovery and registration of possible donors, of the proper study of their blood to make sure of its purity for injection, and of provision for securing, storing and distributing blood so that the maximum degree of specificity and its most appropriate allotment may be reasonably assured. A further caution is in regard to the method of administration, it being emphasized that whether or not intramuscular or intravenous injections be given, it is essential that the serum be given intraspinally, inasmuch as it is well established that substances introduced into the tissues or blood stream are not passed to the cerebrospinal fluid, at least in concentration sufficient to be effective in the treatment of the conditions under discussion.

In conclusion, we will just mention briefly our third reason for bringing before you this often repeated subject of the infectious diseases, a reason which we have intended to imply in what we have already said, namely, our belief in the opportunity and the responsibility in connection with these cases which concerns every physician. We believe that the prophylactic measures which have been developed and which are being perfected should be the object of persistent and consistent individual and public campaigns.

Sanitary laws, established for the purpose of controlling and eradicating epidemic diseases, can only be the expression of the thought of those who are enabled by training and practice to know their value, and the efficiency of these laws or customs in producing practical results will always be in proportion to the zeal with which they are advocated and urged in accordance with honest conviction of the medical profession. The individual physician in

his daily rounds has the privilege, which entails the obligation, to make the most direct appeal to the public, whose doubt and prejudice he may frequently explain away by a brief discussion of the principles in which he himself believes.

When it has been clearly demonstrated that diphtheria can practically be eliminated from a community, it behooves every community to bend every effort to duplicate that accomplishment. The promise of a similar result in scarlet fever should be carefully and seriously studied so that the desired end may be reached sooner by the co-operation of all concerned, rather than hindered by indifference or hasty adverse conclusion. The success which has attended the efforts at control of some of the diseases in the past should be accepted as adequate grounds for hope of even greater achievement in the future. Upon our diligent observation of the clinical and laboratory data and our readiness to co-operate with each other may depend the orderly and efficient conduct of measures which may prevent, or control epidemics of meningitis or diseases of the encephalomyelitis groups, and upon our diligent and logical simultaneous employment of non-specific therapy may depend the success of the specific agents which have been proved to be of value or whose value it is hoped will be demonstrated.

REFERENCES.

1. Blood in Scarlet Fever: *Virginia Medical Monthly*, 53:709-713, February, 1927. J. W. Lindsay, E. C. Rice, M. A. Selinger.
2. The Leukocytes: Medical Clinics of North America, Vol. 11, No. 5: 1191, March, 1928. Elizabeth Bass, M. D.
3. Etiology of Measles: *Journal Infectious Diseases*, Vol. 41, No. 4: 305, October, 1927. Rudolph Degkwitz.
4. Scarlet Fever. *J. A. M. A.*, 86, No. 16, April 17, 1926, 1191-1195.

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THE UROLOGIC PROBLEMS OF CHILDHOOD.*

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The growing recognition of the importance of thorough urologic studies in childhood is responsible for great progress in the diagnosis and scientific treatment of these conditions in recent years.

The studies of Bugby and Wollstein ("Surgical Pathology of the Urinary Tract in Infants," *J. A. M. A.*, December 31, 1924) shed a great deal of light on the problem of genito-urinary diseases in children. Bugby and Wollstein made a study of the post-mortem reports of 4,903 cases at the Babies' Hospital in New York, and they found that 117 of these patients suffered from lesions of the kidneys. By far the largest percentage of these lesions were the result of obstruction, there being forty-four cases of hydronephrosis, in most of which there were either congenital valves or strictures at the ureteral or bladder orifice or congenital hypertrophy of the verumontanum. They found stones to be present in thirteen cases and pyonephrosis in nine. These patients varied in age from six hours to five years. These findings point out the tremendous importance of studying these little patients for the possibility of urinary tract disturbances, many of which are amenable to treatment by properly directed methods.

Lowsley and Butterfield ("Urologic Conditions Among Children," *Journal of Urology*, December, 1925) discussed the subject at length and reported 100 cases coming under observation at the New York Hospital. They found that thirty-seven of these patients came complaining of incontinence of urine, chiefly nocturnal; that twenty-nine complained of congenital anomalies, with thirteen cases of renal infection, four of which were tuberculous; there were four cases of vaginitis; three of stricture of the ureter; two perinephritic abscess; two calculus; one nephritis: one lues, and one venereal warts. There were seven cases in whom no pathology could be found. These patients complained chiefly of pain and frequency of urination and cleared up very promptly on forced fluids and alkalinization of urine. They varied in age from eleven months to sixteen years, the average age being eight years. There were two patients suffering from congenital malformation of the posterior urethra and two with stenosis of the meatus. Here, again, we notice a propensity to congenital defects.

Abraham Hyman ("Clinical Aspects of Surgical Disease of the Urinary Tract in Children," *Journal of Urology*, October, 1926) reports 150 cases, 62% of which are due to lesions of the upper urinary tract. Of this number, there were ten suffering with hydronephrosis, ten with tuberculosis, seven with pyelonephri-

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tis, twenty-one pyelitis, twelve with neoplasms. There were six perinephritic abscesses. Included in forty-eight diseases of the lower urinary tract were twenty-eight instances of chronic retention of urine. The causes of this retention were contracture of the neck of the bladder, diverticula of the bladder, congenital valves of posterior urethra, etc.

It will be noted from the above figures that the genito-urinary diseases usually met with in children differ from those found in adult life in the increased frequency of congenital defects and of enuresis, and in the absence of diseases incident to advancing years, such as carcinoma and hypertrophy of the prostate. Congenital defect or malformation of the genito-urinary tract is of relatively frequent occurrence and always deserves careful consideration. The most frequent malformations seen in the upper urinary tract in adult life are double ureters, horse-shoe kidneys and, occasionally, congenital absence of one kidney. Careful study of autopsy material in infants has shown that there are numerous instances of congenital stricture, valve formation in the posterior urethra or lower ureter, contracture of the neck of the bladder, and hypertrophy of the verumontanum. These lesions set up marked urinary disturbances early in life, causing back pressure probably before and certainly immediately following birth, and are usually fatal in young childhood unless discovered and corrected.

The first discovery and treatment of congenital valves of the posterior urethra in children was at the Brady Urological Clinic in 1912. Several such cases have been treated with complete relief of the urinary obstruction and back pressure. Several other observers have since reported such cases. When it is remembered that a large number of small children suffer with gastro-intestinal disturbances, pain, gas and indigestion, and that these symptoms are frequently caused by disturbances of the urinary tract, it would be well in such patients, and in those who are anemic and fail to make proper gains, to be more diligent in our search for possible trouble in the kidneys and urinary channels.

The principal defects of the lower genito-urinary tract are undescended testicles, which most frequently result from contraction of the fascial bands surrounding the venous plexus of the testicle and epididymis. At operation it will be found that when the fascia and bands of adhesions are dissected away, completely freeing the veins, there will be no trouble in bringing the testicle down to its normal location.

Hypospadias, a malformation of the urethra in which it opens on the under surface of the penis short of its normal location, is easily relieved by plastic operation. This operation should be done preferably after the fourth and before the twelfth year of life. Epispadias, a much rarer deformity in which the urethra opens on the upper surface of the penis, can be treated very much in the same way. Epispadias, however, is frequently accompanied by defect in the bladder sphincter, with incontinence of urine. Operations for tightening the sphincter have been performed and many successful cures are reported.

Stenosis of the meatus is a fairly frequent anomaly and is occasionally so tight as to produce actual back pressure. The operation for relieving this condition is very simple, and in every instance where the meatus is sufficiently small to produce painful or prolonged urination, the condition should be relieved. Hydroceles and cysts of the cord are occasionally seen in children and should be treated as in adult life.

The majority of children complaining of nocturnal enuresis can be cured by proper home training. There remains a small number in which the condition seems pathological. Search should be made for any congenital defect or malformation in these cases. Occasionally there is subnormal development in the bladder sphincter, or adhesions about the prepuce, or stenosis of the meatus in the male may be causative factors. If no such defects are present, the instillation of irritating substances into the posterior urethra will frequently bring relief.

One of the most troublesome diseases found in childhood and the most amenable to treatment is pyuria. Pus in the urine may result, as in the adult, from infection anywhere along the entire urinary tract. There is a tendency to designate and treat all cases of pus in the urine as pyelitis, forgetting the urethra, bladder and ureters as possible and frequent locations of the disease. Urethritis is occasionally met with both in the male and female child,

and may be due to the staphylococcus, to a diphtheroid type of bacillus, or to the gonococcus. Simple urethritis is more frequently seen in children with poor hygienic surroundings, and improvement in the child's general health, plus thorough cleanliness, usually is sufficient to clear up the disease. Children not infrequently contract gonorrheal infection from older relatives or from servants, and require about the same treatment as adults. Cystitis in children is probably much more frequently seen than true pyelitis. Investigators have shown that only about 50% of pronounced infections of the bladder also involve the upper urinary tract. Pyelitis in children may be an ascending infection or may result from infection from the blood stream. It is found that girls are much more prone to pyelitis than boys, while the disease is many times more fatal in boys than in girls. This is probably due to the fact that girls are much more subject to the ascending type of infection, which is usually colon in character and much milder than the type of pyelitis which is contracted through the blood stream and is more frequently due to some type of coccus.

Tuberculosis of the genito-urinary tract is frequently met with in children, and careful study should be made in patients complaining of painful urination over long periods of time. Stones are also much more frequent in the urinary tract of children than was formerly thought. Many attacks of abdominal colic and many persistently fretful and crying babies have calculi.

In discussing the treatment of urinary tract infection, it is well to recall that there are two factors which prevent a rapid improvement and cure of these cases—foci of infection in other parts of the body, and faulty drainage of the urinary tract. These two factors probably also are the principal causes of infection. Patients contracting an infection of the urinary tract and having no long standing and persistent infecting focus, and who have adequate drainage, will clear up under proper elimination, diuresis, and antiseptics taken by mouth. Those who, after following such treatment, do not improve or have frequent remissions, demand careful study for the elimination of the two factors above mentioned. It is to this type of patient that cystoscopy offers most, and the following cases are reported for the purpose of emphasis.

Case Reports.

Case 1. B. P. B., age 2½ years, was seen October 8, 1926, because of the persistence of pus in the urine, general restlessness, underweight, and repeated attacks of fever. The child, born in July, 1924, was under-sized at birth and has always suffered with some diarrhea. She has never been up to normal weight for her age, always slept poorly, a great deal of difficulty was experienced with feeding, and she was generally fretful. The urine was first examined at the age of six months, when it was found loaded with pus. She had apparently suffered for some time with pyelitis. She had always run an irregular temperature; whenever taken, it was either above or below normal. Cultures from the urine at six months of age showed streptococcus and colon bacillus. She was put on the usual medical treatment for pyelitis. At the age of one year she was given about a dozen doses of autogenous vaccine and was later given colon bacillus vaccine with apparently transient improvement. At six months of age she had double otitis media and both drums were punctured twice within six months. When she was about twelve months old her adenoids were removed and several weeks later one drum was again punctured. At eighteen months of age her tonsils and adenoids were removed. The child had never had tonsillitis, but the tonsils were removed with the hope that their removal might have some effect on the infection in the kidneys. During the year following removal of the tonsils, until seen in October, 1926, the child was on general medical treatment for pyelitis, including alternating periods of alkalinizing and acidifying the urine, administration of urotropin and of hexylresorcinol.

Our first examination showed a small, rather undeveloped little girl, about 2½ years old with sallow complexion. Catheterized urine from the bladder contained numerous pus cells. Under ethylene anesthesia, a No. 16 French cystoscope was inserted without difficulty. The bladder mucosa was mildly congested throughout and considerably roughened. Both ureteral orifices were normal in location. The right was rather large and gap-

ing; the left was slightly stenosed. The right ureter was catheterized with a No. 5 catheter without difficulty. Eight c.c. of slightly turbid urine were withdrawn with a syringe. This urine contained from eight to ten pus cells to the high powered field. The kidney pelvis was thoroughly irrigated with ½ of 1% silver nitrate. The catheter was withdrawn and efforts made to pass a similar catheter up the left ureter were unsuccessful. After passing a No. 4 pointed bougie up the left ureter, a No 5 catheter could be passed. There was no residual urine in the left kidney pelvis. A specimen was collected and the pelvis irrigated with ½ of 1% silver nitrate. Specimen from this kidney contained two to three leukocytes to the high powered field. Twenty-four hour cultures showed numerous small gram negative bacilli from both kidneys.

She was again seen on October 22, and bilateral ureteral catheterizations with irrigation of both kidney pelves were carried out. At this time there was no pus from the left kidney, but apparently no improvement in the infection of the right. Both kidney pelves were irrigated with 1% silver nitrate. On November 5, 1926, she reported for observation. A specimen of urine from the bladder was examined and found to contain ten leukocytes to the high powered field. There was very marked improvement in the patient's general health. Her parents reported that she slept better, her appetite was improved, and that her complexion seemed better. On November 18, she again appeared for observation. Examination of urine showed it to be entirely negative. There was an average of about one leukocyte to the low powered field and the patient was symptom-free. In summing up the improvement noted in the baby, the child's parents stated that there was general improvement in her appearance, she had gained weight, her appetite and her disposition had improved, she slept better, there was less odor to the urine, there was much less frequency of urination, and that the diarrhea had disappeared entirely.

The little girl did very well indeed until about the first of February, 1927, when her parents again noted considerable restlessness and irritability, with apparently some increase in the bladder frequency. About a week after the onset of these symptoms one of her ears began to run. On February 8, under ethylene anesthesia, another examination was made. The bladder mucosa was mildly congested. Both ureters were catheterized without difficulty, the right with No. 6 and the left with No. 5. There was no residual urine in the pelvis of the right kidney. There were about 3 c.c. of residual in the pelvis of the left kidney. Specimens from both kidneys were collected. There were no leukocytes in the urine from the right and only an occasional one in the urine from the left. Both kidney pelves were irrigated with 1% silver nitrate. From cystoscopic evidence there appeared to be no return of the urinary infection. It is probable that most of her trouble at this last attack was coming from the ear. Since her last observation, February 8, she has been behaving very much as any normal child of her age, eating well and making satisfactory gains and seems entirely well.

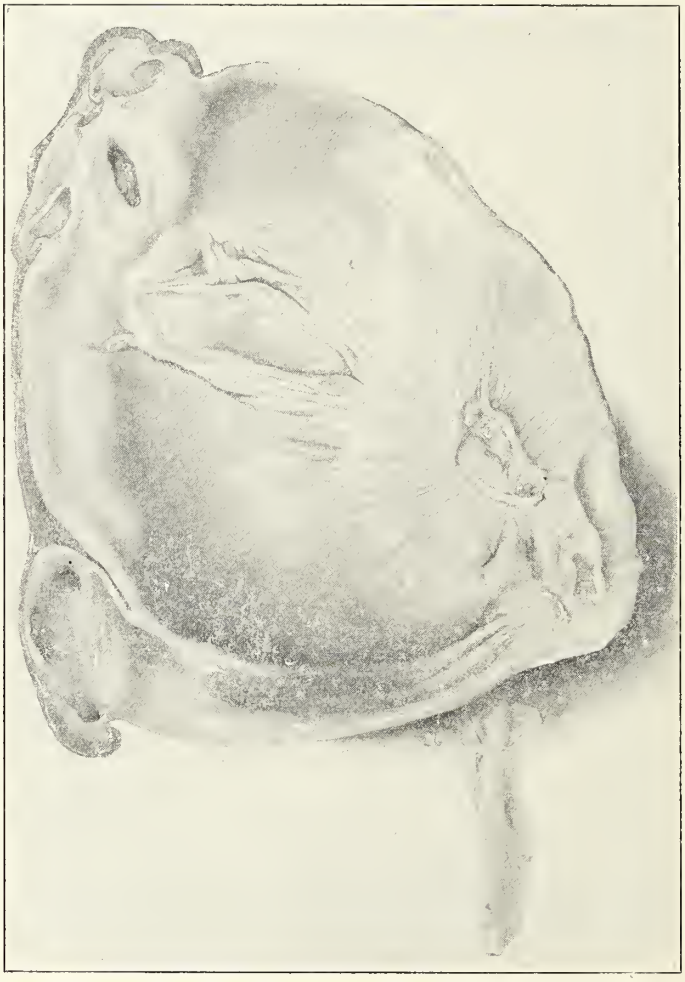
Case 2. Master J. A. C., age 7, was admitted to St. Elizabeth's Hospital May 2, 1926, complaining of a mass in the left side of the abdomen. From the history, the child has always been in normal health and has never suffered any pain or tenderness in the abdomen so far as the parents are aware of. Until the past few months he constantly wet the bed, but this habit has not been noticed for several months. There has been no other disturbance of the bladder. The child's parents state that his abdomen has always been prominent, but it is only within the last few weeks that they have noticed a definite mass in the left side of the abdomen. General physical examination showed a fairly well developed and normal looking child with a definite hard mass filling the entire left side of the abdomen. X-ray examination of the genito-urinary tract showed a normal kidney shadow on the right side. On the left, no kidney shadow could be made out, but there was a large mass which apparently filled the entire side. Cystoscopic examination, May 3, 1926, showed the bladder mucosa normal throughout. Indigo-carmine, given intravenously, appeared in five minutes from the right side. No dye was seen from the left side. The left ureter could not be catheterized. The catheter passed up about an inch and met complete obstruction. The right ureter could be catheterized without difficulty.

Conclusions: Patient has obstruction to the

left ureter, either a congenital valve or a stricture with resulting hydronephrosis of the left kidney. On May 5, 1926, the left hydronephrotic kidney (Figure I), was removed by Dr. J. Shelton Horsley. The patient made an uninterrupted recovery and left the hospital May 25, well.

Case 3. C. W., girl, age 15, entered St. Elizabeth's Hospital April 30, 1924, complaining of pain in the right lower quadrant of the abdomen, at times extending into the right side of the back. She had complained of this pain from time to time ever since she could remember. Occasionally there were exacerbations of severe pain, but usually a dull ache in the right side most of the time. She was thought to have chronic appendicitis and on several occasions her parents had been advised to have her operated upon. Physical examination was negative with the exception of tenderness over the right side of the abdomen and in the right lumbar region.

Cystoscopic examination showed bladder mucosa normal. There were a few leukocytes and occasional red blood cells in the bladder urine. Indigo-carmine appeared from the left kidney in eight minutes and from the right in ten minutes. The right ureter wath catheterized without difficulty and about one and one-half ounces of urine drawn off from the kidney pelvis. This urine contained occasional leukocytes. An X-ray picture of the right kidney was negative for stone. Under the fluoroscope the pelvis was filled with 15% sodium



Shows anterior wall of the left hydro-nephrotic kidney resulting from stricture of the ureter. This kidney was removed from a boy seven years of age.

bromide solution, the catheter having been withdrawn to a point below the prominence of the sacrum. After the pelvis and ureter were filled, an X-ray picture was taken, which showed the ureter and pelvis to be markedly dilated. Most of the dilation in the pelvis was in the calices. There was a filling defect in the pelvis about one inch in diameter. This filling defect was believed to be a uric acid stone. On May 2, 1924, a pyelotomy was done by Dr. J. Shelton Horsley and a stone removed from the right kidney pelvis. The patient made a good recovery from operation. A cystoscopic examination on May 19 showed the bladder mucosa midly congested, a few leukocytes in the bladder urine and no residual urine in the right kidney pelvis. Urine from the right kidney contained a few leukocytes. Pyelogram showed the calices to be markedly dilated and the kidney pelvis well filled with the solution. A slight hydronephrosis and dilatation of the ureter remain.

St. Elizabeth's Hospital.

CONTRACTION OF THE VISUAL FIELDS, DUE TO FOCAL INFECTION.

Report of Two Cases.*

By CLARENCE PORTER JONES, M. D., F. A. C. S.,
Newport News, Va.

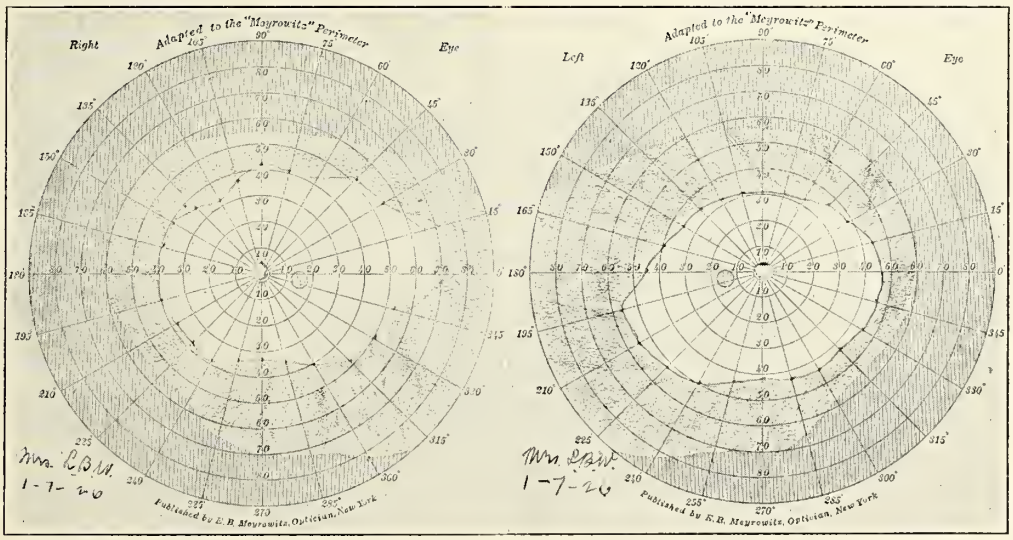
When blindness either partial or complete or contraction of the visual fields occurs, with no retinal pathology demonstrable to eye of the observer, for want of a better name one is apt to say "Toxic Blindness."

Blindness occurring in apparently healthy persons may be toxic. There is a post-bulbar oedema of the optic nerve which may ensue for a number of days before a well defined neuritis becomes fixed. Unless the cause is sought and removed, the natural consequence is total optic nerve atrophy. Scattered cases here and there have occurred in the literature during the past ten or twelve years. As each of you has read them, we will not bother to refer to them here.

As our program is a long one today, I shall report just two cases; each one seems to teach the worth while of the proposition of early intensive study and prompt action.

Mrs. L. B. W.—Age 34 years, came from 30 miles out in the country on January 7, 1926, complaining that she could see clearly only in the front of her, that she had had several accidents and many near accidents while autoing. For the past two days she had suffered temporary blindness for a period of one or two minutes; suffered 3 attacks the day she came.

Examination of eyes—vision 20/20 each. Tension 29, McLean. Conjunctiva, cornea and sclera normal in each eye. Ophthalmoscopic examination revealed no pathology. Field of vision contracted in each eye. She was sent



The author submitted other charts, but to conserve space we were compelled to omit the intermediate charts in each case.

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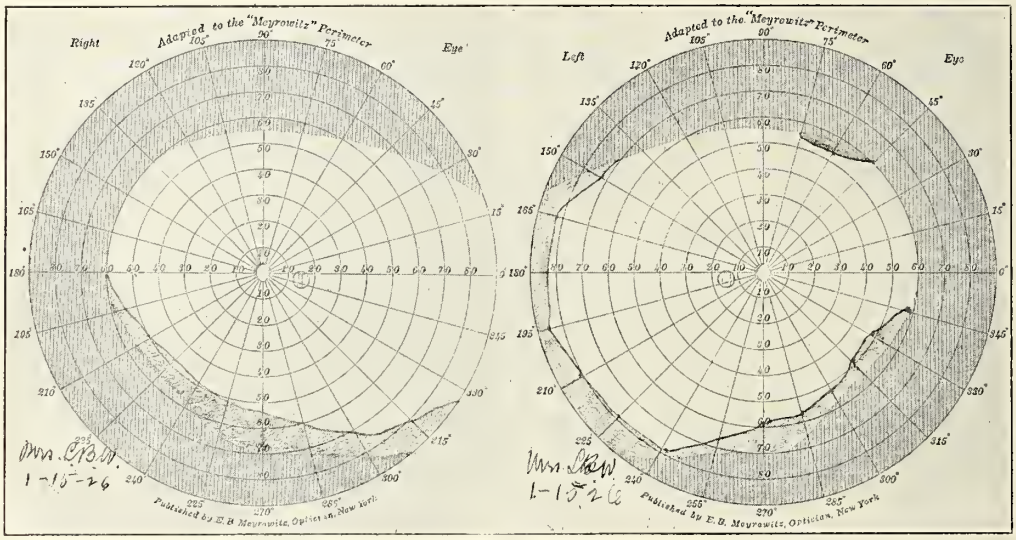
*Read before the Virginia Society of Otolaryngology and Ophthalmology.

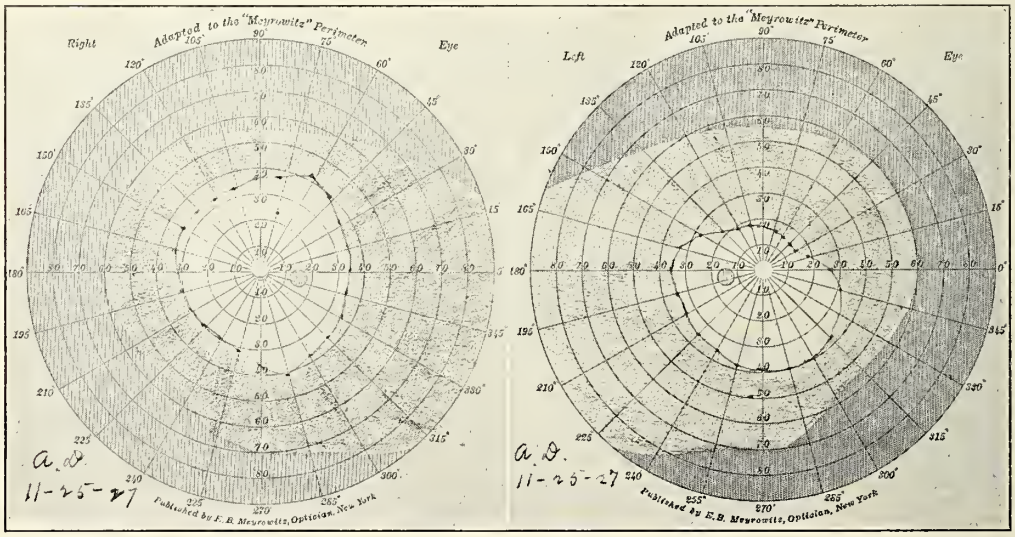
to the Elizabeth Buxton Hospital and put to bed. With the aid of Dr. L. E. Stubbs and others, a very careful and complete physical examination was made, including laboratory and X-Ray studies. She had a negative Wassermann. No pathology could be found except four abscessed teeth and a very minor laceration of the cervix uteri. The nasal sinuses were unusually free from any suspicion of disease. Her tonsils were small and non-



adherent; a culture from depths of crypts revealed a limited number of the staphylococcus albus. On January 13, four teeth were extracted. She refused to be treated for the cervical laceration. On January 15, there was noted a marked improvement in the visual fields. They became normal a few days later and have remained so ever since.

A. D., a negro laborer, aged 42, came to the office on November 25, 1927, complaining that he had had an accident about ten days previously; he walked into a swinging beam which he did not see until he was knocked down by the same. He had had some near accidents, and said that he could not see things at the side of him, and that for a few minutes at a time, occasionally, he was blind, or nearly so.

Examination of eyes—vision 20/100 in each eye. Measure of the fields (using a tiny lamp in place of white disk) showed a contracted



field in each. Tension McLean, 19 mm. each. The ophthalmoscope revealed nothing abnormal.

Throat negative—his tonsils had been thoroughly enucleated. His teeth were examined by a dentist, who reported no pathology.

Nose—in the right chamber was seen an amber colored jelly-like mass hanging from under the middle turbinate body. This mass was pulled away and sent to the laboratory for culture; the report being staphylococcus aureus, pure culture. The left nasal chamber appeared normal. A Wassermann was made which proved to be negative. X-Ray pictures were made which indicated a slight haze in right frontal sinus and right antrum.

On November 29, the right antrum was punctured and irrigated with 25 per cent alcohol in boric acid solution. There was no pus or cloudiness in the return fluid, which was examined in a dead black basin.

November 30, the right eye was blind, left eye vision 20/150. Ophthalmoscopic examination was negative.

December 1, suction drew a yellowish mass from under the middle turbinate, right side. The right frontal sinus was opened intranasally and was found to contain this same material, an amber colored mass which on culture proved to be staphylococcus aureus.

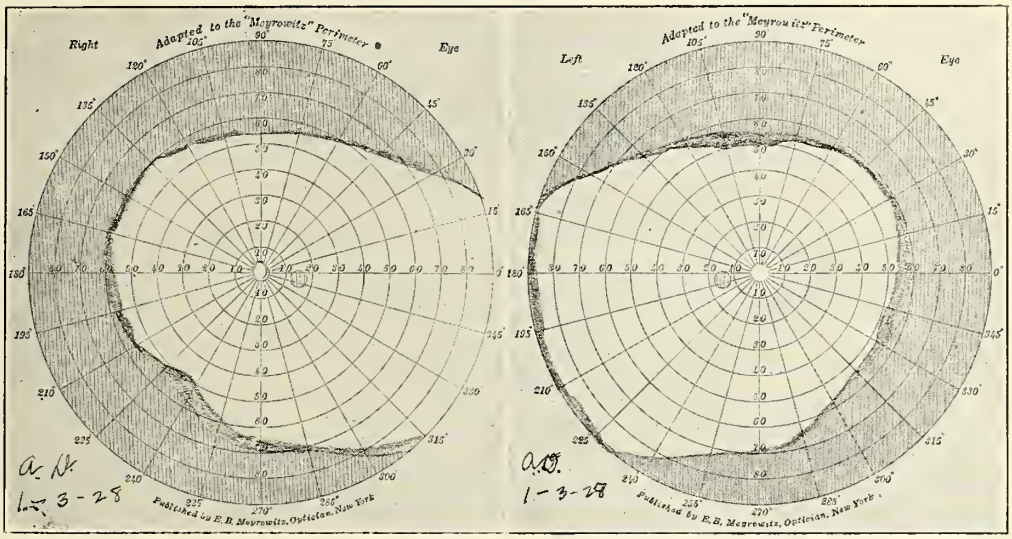
December 3, vision, right eye counts fingers at 3 feet, left eye 20/70.

December 10, vision right eye 20/150, left 20/70.

December 15, an amber colored mass was seen hanging down in the naso-pharynx. The right posterior ethmoids were opened; also a goodly portion of the anterior wall of the right sphenoid sinus was removed. The same amber colored mass was found in each of these locations. Culture of a swab from each yielded staphylococcus aureus.

January 3, 1928, visual fields normal in each eye, vision 20/40 in each.

January 21, vision 20/20 in each eye, visual fields normal in each and he has continued well.



He appeared at the office almost every day during the treatment and his right nasal chamber was tamponed with cotton soaked in hot 25 per cent solution of Solargentum which was allowed to remain in for one hour.

BLOOD SERUM CALCIUM—ITS RELATION TO DISEASE.*

By C. LYDON HARRELL, M. D., Norfolk, Va.

In 1924, Pottenger published a paper in which he recommended calcium chloride intravenously for asthma, hay-fever, urticaria, serum sickness, spasmodic colon and diarrhea. In his asthma cases he claimed his patients were free of attacks from a few months to a year.

Following the publication of this paper many of us began to use the drug. We are always ready to try any thing that will give relief and comfort to the chronic asthmatic

*Read before the Norfolk County Medical Society, March 12, 1928.

even though it be for a short while. I am sorry to say that our results were disappointing and many discarded the drug. I determined to give it a fair trial and have continued its use in asthma and hay-fever. I will add that it only helped to break up the attack; it does not relieve the cause.

Pottenger's idea was that there was some defect in the neurocellular mechanism, due to an imbalance of the potassium and calcium ion, producing a hyperirritability. He believed this to be due to a lowering of the calcium in the system. He treated them regardless. According to his article, he made no attempt to estimate the calicum content of the blood. With this in mind, we had our technician look into the different methods of determining the amount of calcium in the blood. She selected the Tisdall method, and worked with it for six months before we began to record her findings. The normal blood calcium as given by different workers varies from 9—13 mgms. per 100 c.c. of blood serum. Victor Myers, in his laboratory text, gives 9—11 mgms. Charles Mayo, in a lecture on calcium in the Mayo Clinic, gives 10.5 mgms. Greisheimer and Van Winkle studied 55 tuberculous adults. This work was on plasma calcium, and not on serum. The figures ran from 10.9 mgms. to 16.4 mgms. These were the highest estimates I found. Most of the workers consider 10 mgms. per 100 c.c. of serum to be the standard in a normal individual.

We have in our office a list of about four hundred blood calciums done in the past two years. I have tabulated here 346, the diagnosis of which I have been able to trace. In the group on which a positive diagnosis of tuberculosis was made, there were 44. Of this group, 25 had a serum calcium below 10 mgms., and eight of them were below 9 mgms.—about 57 per cent below normal. In the group diagnosed as infection of the upper respiratory tract, there were eighty-eight, thirty-eight of which were below 10 mgms. In the group diagnosed as bronchial asthma, there were twelve; of these, eight had a serum calcium below 10 mgms. Two of these were re-checks. One had had a serum calcium of 9.5 mgms. which rose to 12.6 mgms. on treatment, and the one with 8.4 mgms. rose to 13.9 mgms. by giving calcium chloride intravenously. In the hay-fever group there were five cases. All showed a serum calcium below 10 mgms. except one. In the neurological group there were one hundred and forty. All of the latter were cases of Dr. Redwood's, and will be analyzed in his discussion. There is another group I classified as miscellaneous; there were fifty-four in this group. Only fifteen showed a calcium below 10 mgms. I could find only two cases of hypertension on which I had a serum calcium done; they showed 8.9 mgms. and 9.3 mgms., respectively.

A few of these cases deserve special mention. A white boy, age 14, subject to colds, had not been well all winter, and had an infected antrum, as shown by X-ray. He had a serum calcium of 6.4 mgms. March 23, 1926. He was given Alpine sun lamp treatments twice a week, parathyroid extract, gr. 1/10, Lilly, t.i.d.; also autogenous vaccine for a while. On May 17, 1926, not quite two months later, he was entirely well and had a serum calcium of 22 mgms. This is a very high reading, and may be a mistake, but he remained well.

White boy, age 12, consulted Dr. Land for sore eyes, episcleritis, and was treated for some time, with no improvement. His serum calcium was 8.59 mgms. On October 18, 1927, he was given para-thor-mone, m.-x., Lilly, hypodermically. October 20th, a similar dose was repeated; October 22nd, just four days later, his eyes were much better and his serum calcium had risen to 12 mgms. He was then put on parathyroid ext., gr. 1/20, by mouth t.i.d., and advised to continue it for some time. On February 4, 1928, he came by the office and his serum calcium was found to be 10.3 mgms. He had not taken any parathyroid for over a month. His mother stated that his eyes would occasionally get sore, when she would put him back on the tablets and they would clear up. Dr. Smart reported a case of scleritis, due to blood calcium deficiency. This was cured by calcium therapy in October, 1927.

A white girl of 17 came in complaining of a tired and worn out feeling; her people thought she was developing tuberculosis. The only abnormality I detected was a slightly enlarged thyroid. Her serum calcium was 7.9 mgms. She was given parathyroid ext., gr. 1/10, t.i.d. In three weeks she was feeling much better, had gained three pounds in weight, her calcium had gone up to 9.7 mgms.,

and she was advised to continue the parathyroid.

A white male, age 45, had pleurisy with effusion, thought to be tuberculous. His serum calcium was 5.6 mgms. He was sent to a sanatorium and I lost track of him. I read an abstract of an article a few days ago, where an Italian physician had treated twelve cases of pleurisy with effusion by giving them calcium chloride by mouth. He thought he promoted the absorption of the fluid in five cases. This invites further study.

One case of chronic nephritis had a serum calcium of 6.6 mgms. I have not had any experience with this, but Bandler and Killiam in a recent article state there is an imbalance in uremia between the calcium ion and phosphorous ion. They quoted Marriott and Howlard who stated that the acidosis in nephritis was due to a failure of the kidney to excrete phosphorus. The formed also stated that if the calcium of the blood dropped below 7 mgms. there were muscle spasms and distinct convulsions. Bandler also observed that when the blood calcium dropped, phosphorus increased. The normal inorganic phosphorus of the blood being 3.8 mgms. per 100 c.c. of serum, in one of Bandler's uremic cases it rose to 12 mgms.

In many of the clinics calcium chloride is being used in edema to promote diuresis. It is recommended by Christian in an article in Cecil's recent book, but he does not state how it acted.

Altnow and O'Hare, in a recent article on Atropine and Calcium in Arterial Hypertension, found that the serum calcium in the hypertensive cases was a little lower than that of the normal individual. They studied twelve cases and found the blood calcium ranged from 8.6 mgms. to 10.6 mgms., and gave as a working normal 10.28 mgms. My two cases were 8.9 mgms. and 9.3 mgms., respectively. Altnow and O'Hare were checking up on some work previously reported by Kylin, who stated that he had obtained a normal blood pressure in four individuals with hypertension by oral administration of atropine and calcium chloride. Altnow and O'Hare used atropine and parathyroid extract, and succeeded in bringing the calcium content up to normal, but got only slight lowering of the blood pressure.

Calcium also seems to have a good deal to do with the clotting of blood. It is used quite extensively before surgical operations to lower the clotting and bleeding time, as in tonsillectomy of bleeders, and in gall-bladder diseases accompanied by jaundice. Dentists tell us that the faulty development of teeth in children is due to a deficiency of lime in the pregnant mother or growing child.

There are several ways of raising the calcium content of the blood. A diet rich in calcium is nuts given over a long period of time. The Alpine sun lamp is useful. Calcium lactate in aqueous solution may likewise be given on an empty stomach. The efficaciousness of this has been doubted by some, but Bower and Roper have demonstrated that it can be done. Calcium chloride intravenously is the quickest way of all, but is fraught with danger. It is very irritating to the tissue in case you get out of the vein, and it must be given very slowly and well diluted. It does not have a tendency to accumulate in the system when given in this way, as it is rapidly excreted through the kidney. The safest and probably the most satisfactory methods are para-thor-mone given hypodermically and parathyroid extract by mouth. Give hypodermically, frequent blood calciums should be done. Given by mouth, blood calcium should be done at least once a month.

Much has been written about the therapeutic uses of calcium, but to my mind there is really only one,—that is to raise the calcium content of the blood when it is found deficient. We have found it low in many conditions, as spasmophilia, tetany, asthma, tuberculosis, hay-fever, infection of the upper respiratory tract, nephritis—with and without hypertension,—and pleurisy with effusion. Many others may be added as the work goes on.

Tuberculosis	Asthma	Infection of Upper Respiratory Tract	Miscellaneous
9.1	8.9	7.2	11.2
11.	10.	8.2	11
7.9	9.5	9.5	8
8.5	*12.6	6.4	11.2
10.	8.2	9.2	8.9
9.5	13.	9.7	†4.6
10.1	9.9	9.8	11.8
9.9	8.4	6.	11.8
9.29	*13.9	13.9	11
8.7	9.5	10.9	12
10.	9.	9.3	10
10.	8.5	12.	9.1
10	———	9.45	12.2
10.8	12	8.9	10.3
8.85	———	13.1	10.2
11.	Hay-fever	9	10.1
9.5	10.4	10 5	10.7
13.2	8.2	8.85	10.6
9.5	9.2	9.9	10.4

Tuberculosis	Hay-Fever	Infection of Upper Respiratory Tract	Miscellaneous
9.9	9.9	13.3	12 3
10.5	9.9	10.2	10.4
9.7		13 3	6.6
10.8	5	9.2	10.9
10.		9.8	11
10 2	Hypertension	9.2	10.8
9.2	8.9	9.95	11
10.4	9.3	10.5	10.9
11.3		9.9	8.6
11.	2	8.5	10
11.2		9.7	11
9.3		11.	14
9.9		10.	10.5
9.9		9.	15
9.		9.1	9.9
9.2		12.7	9.4
10.1			9.4
8.		9.7	7.9
9.2		11.	9.7
7.6		9.5	12
8.8		13.9	10.3
10.8		10.1	10.5
9.2		10.3	9.6
9.3		9.69	11.2
8.5		12	11.4
		10.6	10
44		9	11.3
		10	10.8
		12	9.2
		10.7	9.9
		11.2	9.6
		12.5	10
		10.2	11.2
		9.9	10
		10	10.3
		10 1	9.5
		10.1	
		9.98	
		13	55
		12.1	
		10.2	
		11.1	
		11.2	
		10.25	
		10	
		13.3	
		9.8	
		9.8	
		12	
		8.59	
		11.	
		10.2	
		13.3	
		11.2	
		11.3	
		9.1	
		11.5	
		10.3	
		8.9	
		*9.84	
		10.4	
		10	
		11.3	
		10.8	
		9.2	
		9.9	
		9.6	
		10	
		11.2	
		10	
		10.3	
		88	

*After treatment.
†A colored man just over pneumonia.

I do not know whether demineralization is a cause or effect of disease, whether the lowering of the calcium content of the blood is due to a dietetic discrepancy or an endocrine disturbance, but we do know that in many instances where the calcium content of the blood is found below normal and it is raised to or above 10 mgms., the patients are relieved of the symptoms of which they complain. The calcium can be raised by feeding parathyroid extract alone. It is pretty well accepted that the parathyroid gland is the calcium regulator of the system, as proven by Collip and others.

References.

Pottenger, F. M.: Discussion of the Etiology of Asthma. *Jour. M. M. S.*, Feb., 1924.

Myers, Victor: Laboratory Text—Blood Calcium, 9-11, Slightly Higher in Children than Adults.

Mayo, Charles: Mayo Clinics.

Walters and Bowles: Mayo Clinic—Demonstrated in 1924 that Calcium Given by Mouth or Vein Had no Tendency to Accumulate in the System. It was Eliminated Rapidly by Blood Stream.

Greisheimer, E. M., and VanWinkle, C. C.: Plasma Calcium in Tuberculous Adults. *American Review of Tuberculosis*, Feb., 1927.

Altnow, Hugo O., and O'Hare, James P.: Observation on the Action of Atropine and Calcium and Parathyroid Preparations on Arterial Hypertension. *Annals of Internal Medicine*, December, 1927.

Bandler, Clarence J., and Killiam, John A.: The Practical Value of Chemical Analysis of the Blood in Urological Conditions. *Journal of Urology*, January, 1928.

Bower, Walter, and Roper, Marian W.: The Effect of Calcium Lactate Ingestion on Serum Calcium. *Jour. A. M. A.*, December 4, 1926.

Smart, Frank P.: Unusual Case of Blood Calcium Deficiency. *Virginia Medical Monthly*, October, 1927.

Discussion.

Dr. F. H. Redwood, *Norfolk:* One hundred and forty calcium determinations have been made on the same number of successive patients who came in for a nervous or mental diagnosis. From this study a number of interesting points have been brought out and possibly one fairly definite conclusion has been reached. At the present time no one has been able to give a satisfactory normal standard for calcium concentration in the blood serum. In our office we take the normal as ranging from ten to twelve milligrams per one hundred cubic centimeters of blood. As we collect a larger number our ideas as to the normal may change from the above figures.

Of forty-seven cases diagnosed as psychoneurosis, eighteen were below normal, the lowest being eight milligrams. On sixteen endocrine cases there were only four that were below, and none of these were below nine.

In connection with the psychoneurotic and endocrine cases, an interesting point was brought out in regard to the blood sugar level, the blood sugars being lower in the psychoneuroses than in the endocrine disturbances. This I would expect to be the other way. In sixteen cases of epilepsy there were seven below normal. In ten cases of hypertension there were four cases below normal, the lowest

being seven milligrams. In two cases of postencephalitic syndromes with tremors, both were deficient in calcium. In seven cases of spasmodic muscular disorders, six were below normal and one was a low normal.

From the above study, no conclusion can be drawn with the possible exception of the muscular conditions. Although there were only a few cases, the determinations were consistently lower than any of the other groups.

Dr. Frank P. Smart, *Norfolk:* My interest in blood-calcium deficiency dates from a case of scleritis which I reported in *The Virginia Medical Monthly* last October. In this case the calcium deficiency was detected in routine examination and was not thought to be connected with the scleritis, but the administration of calcium and parathyroid acted almost as a specific in the primary attack and also in three relapses during the succeeding year.

Another case of interest is that of a lady whose weak spot seemed to have been her ethmoids. She probably carried a slight, very low-grade infection there all the time. She probably became sensitized to the bacterial protein of her ethmoid infection, or there may have been some other cause, but the fact remains that her turbinates swelled rather suddenly one day and her eyes got red and watery. For two weeks we tried every way to shrink her turbinates, but nothing succeeded, even in giving her one breath through the nose. Her blood-calcium was low and Dr. Harrell started an intravenous injection of calcium chloride. By the time half of the dose was injected, her nose suddenly cleared, and in the succeeding six months there has been no recurrence.

Another case is of a young lady on whom I was about to perform an intra-nasal operation. The laboratory reported a clotting-time of more than 35 m nutes She was given one dose of calcium chloride intravenously and 10 units of para-thor-mone intramuscularly and the operation was postponed. Three days later her clotting-time was 3 minutes and the operation was unaccompanied by any undue bleeding.

The last case I will mention is one that is very typical of a large group. Without going into detail, the history was of asthma of ten years' duration, associated with chronic ethmoiditis and polypoid degeneration. For business reasons the ethmoid operation had to be deferred, but as his blood-calcium was low, a calcium regime was instituted and the asthma disappeared almost at once. In fact, the asthma was the thing from which he had sought relief, and to this day I have not been able to get him to have his nose attended to.

I feel that the whole subject of calcium therapy is still largely on an empirical basis; many cases show low blood-calcium, but no symptoms; others show deficiency symptoms in spite of a high blood-calcium. I think that one of the greatest hindrances to progress from an empirical to a scientific basis is inherent in the test itself. The end point of titration is a pink color, which persists for one minute. The relative acuity of color-vision of individuals that are not color-blind, is so variable that the readings by different technicians will vary a great deal. A less vague end-point should be sought. When this is found, we will no longer have one authority sticking to 9 mg. and another to 14 mg., as normal standards.

505 *Medical Art Building.*

SARCOMA OF THE CHOROID.*

By J. N. GREEAR, Jr., M. D., Washington, D. C.
Associate Professor of Ophthalmology, Georgetown University, School of Medicine.

The most common malignant intrâ-ocular tumor that the ophthalmologist encounters is sarcoma of the choroid. These sarcomata consist either of round cells or of spindle cells, or a mixture of both. They are usually pigmented, the non-pigmented variety being rare.

The development of sarcoma of the choroid has been divided into four stages:

1. Early stage, which may or may not be accompanied by detachment of the retina or disturbances of vision.

2. Glaucomatous stage, in which the eye usually assumes the appearance of acute congestive or absolute glaucoma.

3. The stage where the tumor has extended beyond the confines of the globe.

4. The development of metastatic nodules in the internal organs, most frequently the liver. Years usually pass before the sarcoma has run its course, although its growth becomes more rapid toward the later stages.

Sarcomata develop from the external layers of the choroid and usually grow inward toward the vitreous space, pushing the retina before them. Where the retina is still in contact with the choroid or tumor mass the diagnosis should be more easily made. However, the retina soon becomes detached due to circulatory disturbances and the retinal detachment becomes very much larger than the area involved by the tumor itself. The intra-ocular tension is of value in determining whether we are dealing with a sarcoma or with a simple serous detachment of the retina, for in the former a normal or increased tension usually prevails, while in the latter a subnormal tension is the rule. Transillumination is one of the most valuable adjuncts we have for differentiating these two conditions, and this will give us fairly accurate information even though the lens has become partially opaque.

de Schweintiz[1] expressed the opinion that the diagnosis of detachment of the retina due to a tumor, although often presenting apparently characteristic features, was not, in certain instances, free from difficulties.

He detailed two cases which presented the appearances usually ascribed to a growth.

*Read by invitation before the Virginia Society of Otolaryngology and Ophthalmology, in Newport News, Va., Spring, 1928.

After enucleation, it was found in the one instance that the elevation of the retina had been caused by an exudation, and not a morbid growth, and in the other by an exudation of round cells, not sarcomatous, but probably due to a chronic inflammatory process.

If the patient comes under observation in the first stage of the disease, the diagnosis should not be difficult, if kept under observation. This does not hold true for the second stage, for at this time the patient presents the symptoms of an acute congestive or absolute glaucoma. A very careful history regarding the vision in the eye prior to the attack and the tension and refraction of the fellow eye, are very important, because in primary glaucoma that has gone to this stage the fellow eye usually shows some evidence of the disease. Localized or undue varicosities of the anterior ciliary vessels may be of value. The iris and anterior segment of the eye should be studied carefully for any evidence of unusual pigmentation.

The type of case in which the media have become opaque and the eye assumes the appearance of an absolute glaucoma is the one in which the diagnosis of sarcoma of the choroid is most difficult. Trans-illumination is of little, if any, value. This is not infrequently the case that presents itself for diagnosis. Sometimes blind eyes are found to contain sarcomata and one occasionally meets with eyes which have been blind and divergent for a very long time becoming affected. Kipp[2] has recorded a case of choroidal sarcoma followed by atrophia bulbi. Twenty years later perforation of the globe and rapid growth of the neoplasm ocurred. Walterhofer[3] reports a case of phthisis bulbi which was found to contain a melanotic sarcoma of the choroid after enucleation. He concluded that the tumor was primary, and the plastic inflammatory processes were either produced by regressive changes in the tumor, or were endogenous, due to local lowered resistance. He suggested that a secondary glaucoma might have developed, followed by a perforating ulcer of the cornea, and phthisis.

Melanotic sarcomata frequently spring from the skin, and in their early and apparently innocent stages are known as moles or pigmented naevi. There have been cases reported in which a monolateral congenital pigmentation formed the predisposition to the development of a melanotic sarcoma of the choroid. Pigmented naevi have been found in the choroid in a few instances.

It is well known that tissues exposed to irritants and chronic inflammatory lesions have a tendency to develop malignancies, and this may have some bearing on the production of sarcomata in blind eyes in which chronic inflammatory conditions persist, and may have been an exciting cause in one of the cases I shall mention later.

Nettleship[4] reported a case of sarcoma of the choroid in an eye affected with gross choroiditis of an early date, this being the essential feature.

Ball[5] says that sarcoma of the choroid may appear as early as the fifteenth or as late as the eighty-fourth year, although it is most frequent between the ages of forty and sixty. Neuro-epithelioma of the retina is found only in children; while sarcoma of the choroid may occur in childhood, such cases are very rare.

The prognosis of sarcoma of the choroid is always grave. While the text-books state that about 40 per cent of the cases operated on in the first and second stages will be saved, it is believed that even a higher percentage of cures would be found to exist if all operated cases were recorded.

Metastases usually make their appearance within a few months after enucleation; however, they may not cause death for a period of five or ten years. Immunity from metastases is considered probable if they have not made their appearance after four years. In untreated cases the duration of life is said to be about five years. The prognosis is more favorable in spindle cell sarcoma than in round cell variety.

Although the prognosis in sarcoma of the choroid is always grave, yet I believe it is much better than in sarcomata, occurring in other regions of the body. This is probably because they are more or less encapsulated in the early stages.

The treatment of choroidal sarcoma is surgery. If the tumor is still confined to the globe, simple enucleation, including a good portion of the nerve, is sufficient. However, if there is any evidence of extension beyond the globe, the orbit should be exenterated, and radium and X-ray applied afterward. Where the growth has broken through into the orbit,

metastases are to be expected. After metastases have taken place, surgery is of no avail except to relieve pain.

Since sarcomata metastasize chiefly through the blood stream, it would seem that where there is no evidence of extension beyond the globe, the post-operative use of radium or X-ray is not indicated. Local recurrences are rare, and radium burns of the skin and permanent loss of the lashes is a common complication.

During the past five years I have had under observation five cases of sarcoma of the choroid, and one reported as arising from the choroid, which I shall report briefly.

Case 1.—I. S., white, female, had been treated as a simple case of refraction for thirteen years. She was seen in August, 1920, at which time there was found to be no change in her refraction from the previous year. In May, 1921, at which time she was 41 years of age, she was again seen, and stated she had been going through the menopause and had been very sick. She had been in bed a great deal, but was much better.

Vision—Right Eye: 20/20+ ws+1.25=c+0.25 60°.

Vision—Left Eye: 20/20 ws+1.25=c+0.37 105°.

She had not complained of any particular disturbance, except her advancing presbyopia, but the routine fundus examination was made. The fundus of the right was found to be normal. The posterior portion of the left fundus was normal, but in the extreme anterior portion of the upper temporal region there was seen a small black protuberance apparently coming off from the anterior portion of the choroid, or from the ciliary body. The diagnosis of sarcoma was made and she was told of the serious outcome if it were allowed to go untreated. Since her vision was still perfectly normal, it was hard for her to see the necessity of such a radical procedure as enucleation, and, before this was advised, it was suggested that she consult other ophthalmologists. She refused consultation and was not seen again until April, 1922. At this time she presented herself with her left eye completely blind and in a state of absolute glaucoma. The tumor had grown very rapidly, and could be plainly seen with oblique illumination filling the upper and temporal portions of the globe. The anterior ciliary vessels were greatly enlarged over this area.

The eye was enucleated and there was no evidence of local extension. Her recovery was uneventful, and she again slipped from under observation. In May, 1926, she died at the age of 46 from a liver condition which we assumed to be a metastasis of the sarcoma (four years following enucleation in the second stage).

Case 2.—S. E. H., age 59, white, female. First seen December 4, 1924. She had been told by an ophthalmologist in another city, seven months previously, that she had a "hemorrhage back of the left eye". She had not seen an ophthalmologist since, and for the past three months she had had flashes of light before the left eye, and the sensation of a veil before it. She had a thyroidectomy and two abdominal operations sixteen years before, but had been well recently.

Examination revealed:

Vision—Right eye: 20/15 with correction.

Vision—Left eye: 20/200 with correction.

The tension was normal to fingers in each eye, and the consensual pupillary reaction was normal. The left pupil reacted sluggishly to direct illumination.

The fundus of the right eye was normal.

The left fundus showed a large mass in the temporal region which projected into the vitreous space. The retina was not detached from the growth, which was very vascular and presented a grayish yellow appearance. There was a small peripheral detachment below, which could be transilluminated while the mass described above could not be. The field of vision of the right eye was normal, while that of the left eye corresponded to the fundus finding.

On December 29, 1924, the left eye was enucleated. There was no evidence of extension beyond the globe, so a fat transplant was done.

The pathological report of Dr. Selinger was as follows:

Eye: Grossly, there is a rather firm dark brown mass about ½ cm. in diameter, which seems to arise from the choroid and extends well out into the vitreous space almost to the midline.

Microscopically: The tumor is completely intra-ocular and is attached to and infiltrates the choroid to a small depth. At this point

the retina has been completely involved in the new growth and cannot be distinguished. The bulk of the tumor mass is composed of rather large but somewhat irregular spindle cells, many of which have an alveolar arrangement and closely resemble endothelial cells, giving the mass the appearance of an endothelioma. Scattered through the growth are many large coarse deposits of yellowish and brownish black pigment. This is most profuse at the base of the tumor. Diagnosis: Melanotic sarcoma.

She was last seen September 6, 1927, three years following enucleation. She had been operated upon for strangulated hernia in February, and had an abscessed tooth removed for neuritis of her right arm. The left socket was clean and normal in apparance. Right eye was normal and patient was apparently in good condition.

Case 3.—R. T., white, female, age 70, first seen by me June 17, 1926. On June 9, 1924, Dr. Eugene Neff, of Madison, Wisconsin, enucleated the right eye, which presented a melanotic sarcoma growing from the sclera outward, but which had apparently arisen from tht lamina suprachoroidea. I have not a complete history of the condition, but the pathological report is as follows:

"Examinations of sections made from the eye received on June 9th shows a tumor growth of the melanotic type. Diagnosis, melanotic sarcoma. This section shows what appears to be a growth springing from the lamina suprachoroidea, extending through the sclera. There is no evidence of growth on the inside of the eye and no evidence of any infiltration of the sclera by the tumor. In other words, locally the tumor does not seem to have invaded the other tissues. This is rather characteristic of a sarcoma. The growth is very vascular, the cells being in intimate contact with the blood vessels. There is, therefore, a probability or at least a possibility that metastasis may have taken place by the blood stream.

W. D. Stovall, M. D."

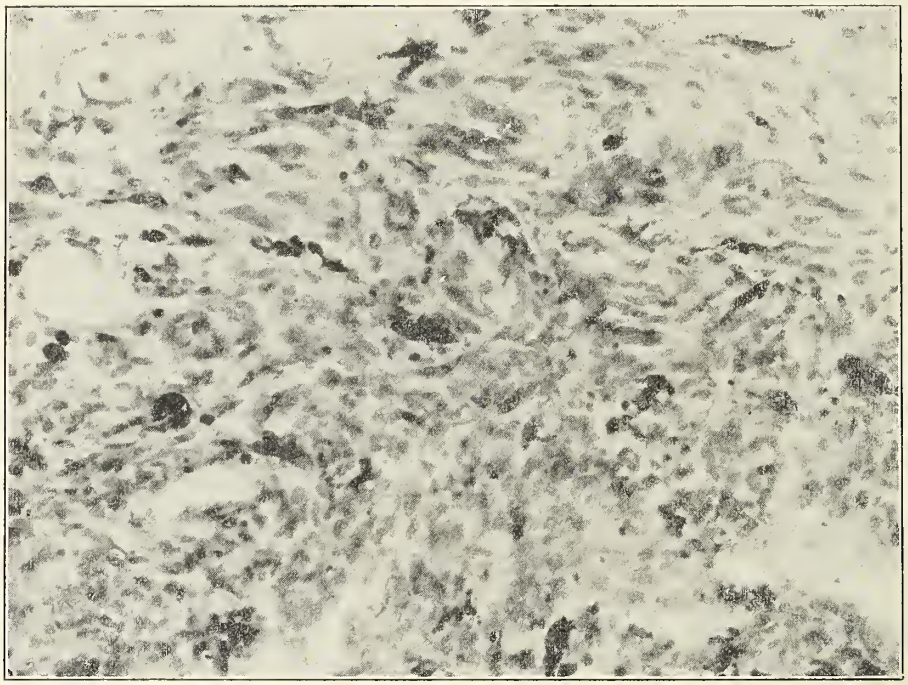


Fig. 1.—Case 4. Microphotograph of spindle cell melanotic sarcoma, showing cellular structure and blood vessels.

Radium had been applied to the socket following enucleation which resulted in a loss of the lashes of upper and lower lids toward the temporal half, and there had been some irritation and soreness ever since. She complained of a lump on the right side of her neck which had shown some tendency to grow for the past year. This tumor was removed by Dr. Wm. Marbury who found it to be inflammatory in nature and neither grossly nor microscopically presented any evidence of milignancy. The

right socket was clean and healthy in appearance with no evidence of a local recurrence.

Case 4.—A. D. B., white, female, age 49, first seen July 14, 1925. She complained of the vision of her right eye having been blurred for three months. She had been under the care of another ophthalmologist and had noted no improvement. During this time she had several abscessed teeth removed.

Examination: Right eye vision=20/70 ws+1.0=c+0.50 130°=20/30-2.

Left eye vision=20/20 ws+0.50=c+0.50 60°=20/15.

Fundus: Left eye normal. Right eye media clear. Disc and retinal vessels normal in appearance; between the macula and disc there were a few scattered areas of exudate in the choroid. Above and to the temporal side of the macula there was an area about two disc diameters in width in which the choroid appeared to be thinned out and moth-eaten, although the sclera could not be seen through it. It gave the appearance of a subsiding exudative choroiditis. The retinal vessels passed over this area, and there was no elevation. No hemorrhages were noted. She showed an absolute scotoma corresponding to the larger area described above. She was given a complete medical survey, and found to have two abscessed teeth and infected tonsils. The teeth were removed, but tonsillectomy was refused. She was kept under close observation, and on March 17, 1926, the following findings were noted:

Right eye vision=20/200 ws+1.50=c+0.25 130°=20/40-.

Left eye vision=20/20 ws+0.50=c+0.50 60°=20/15.

Fundus: Right eye shows few recent areas of choroidal exudate in the macula region. Left eye normal.

March 24, 1926.—Tonsillectomy.

May 6, 1926.—Patient complains of very much blurring before right eye.

Right eye vision=20/40 ws+2.25=c+0.25 130°.

Left eye vision=20/15 with correction.

Fundus: Right eye.—The central portion of the area above and to the temporal side of the macula shows an eleveation of three diopters, and is grayish in appearance.

June 22, 1926.—Right eye vision=20/50 ws+3.25=c+0.25 130°.

Area shows seven diopters of elevation in central portion.

December 3, 1926—Right eye vision=20/40 + ws+5.0. Eleveation of mass six diopters. Transillumination shows growth to be very dense, and corresponding to the mass seen with the ophthalmoscope.

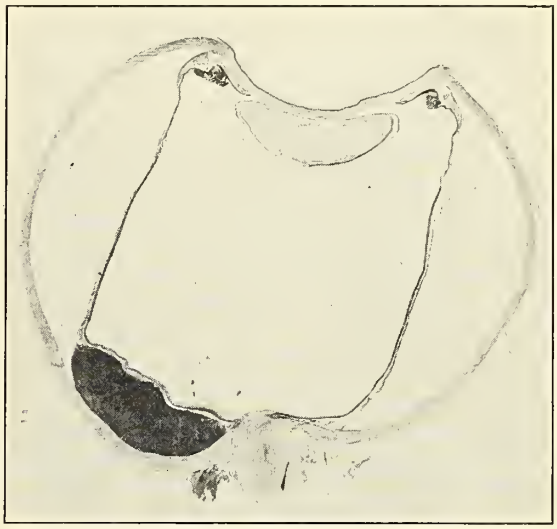


Fig. 2.—Case 4. Photograph showing the flat melanotic sarcoma on one side of the disc. The retina has become detached subsequent to removal.

January 27, 1927.—Right eye vision=20/70 ws+6.0.

Left eye vision= 20/15 with correction.

Tension O. D. 12 (Schiotz tonometer).

Fundus: Left eye normal.

Right eye.—The growth has extended both anteriorly (now measuring 8 diopters) and laterally, encroaching upon the macula and disc, and passing slightly to the temporal side of the macula and above. The retinal vessels pass over the mass without interruption. There is some perivascular thickening of the retinal vessels in this area. The surface of the mass has a rather soft gray appearance with no vascularization being evident.

Diagnosis: Melanotic sarcoma of the choroid.

Enucleation was advised.

I requested that she consult other ophthalmologists. Three men were consulted, all of whom agreed with the diagnosis, and on February 10, 1927, a simple enucleation was performed.

Although there was no evidence of extension into the orbit, radium was applied follow-

ing enucleation. She received a burn of the lower lid and loss of lashes of upper and lower lids to the temporal side. She was last seen in January, 1928, and was in good condition. "Gross specimen shows: The eye recently left with us by you contained a melanotic sarcoma, largely spindle cell in type, arising from just one side of the disc. It is a flat tumor, 2 to 3 mm. in height and extends over a area roughly a centimeter and a half in diameter. The nerve is apparently not involved.

George R. Callender."

"Microscopical Description: Melanotic spindle-cell sarcoma arising to one side of the disc, does not exceed 2½ mm. in thickness by 1 cm. in diameter. Retina has become detached in the manipulation subsequent to removal, and shows a cystic type of degenerative change. Cornea depressed.

George R. Callender."

Case 5. J. O. H., white, male, age 70, first seen July 23, 1927. He was brought in by his family physician from Edinburg, Virginia. He said that the left eye had been blind for several years, and for the past two weeks it had been very painful. He had been seen by

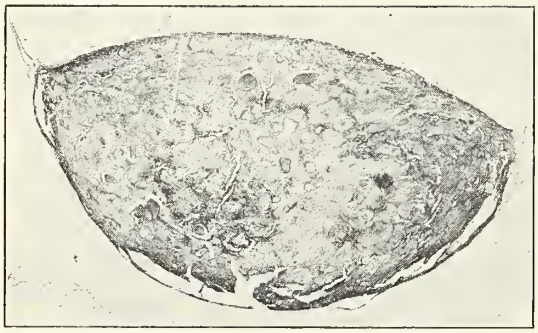


Fig. 3.—Case 5. Photograph of gross specimen showing tumor mass intact.

Dr. Hunter McGuire, of Winchester, in June, 1926, who sent the following report on his findings at that time. "For two years the left eye has been dimming. Large detachment to temporal side of disc. Elevation ten diopters. Black mass of detachment. Transillumination negative. Tension normal. Diagnosis: Melanotic sarcoma. Enucleation advised but patient refused."

Examination: July, 1927.—Right eye vision =20/30+.

Left eye vision=no L. P.

Tension O. D. 20 O. S. 75 (Schiotz tonometer).

Field right eye normal.

Fundus right eye normal.

Left eye presents the picture of an absolute glaucoma. The fundus cannot be seen. Cornea

Fig. 4.—Case 5. Microphotograph of tumor showing profuse vascularization and spindle cell structure.

is not peeling off. Iris is plain and regular. No varicosities of globe. Transillumination throws no shadow.

In view of the report from Dr. McGuire and the history, with a normal right eye, the diagnosis of sarcoma of the choroid in the second state was made, and enucleation advised. This was performed on July 25, 1927. There was no evidence of extension of the growth beyond the globe, and on August 22, 1927, the socket was completely healed, and ready for prothesis. The patient was in good condition at this time. The gross specimen showed a large melanotic sarcoma in the posterior part of the globe.

Pathological Report: "Eye tissue.—Section of tumor shows it to be composed chiefly of an embryonic type of connective tissue cell supported by a delicate connective tissue framework. The cells for the most part are irregularly polyhedral shaped of varying size. The nuclei are large irregular and deeply stained. The cells have a tendency to be arranged in atypical alveolar groups. Blood vessels and channels are rather numerous and filled with blood. Scattered throughout the tumor are masses of pigment of varying size. Occasional mitotic figures are seen.

"Diagnosis: Melanotic sarcoma. Spindle cell.

Dr. Maurice Selinger."

Case 6. C. M., colored, female, age 32. First seen June 23, 1924. She gave a history of her right eye having been blind for some months, and stated that it had been inflamed and painful recently.

Examination: Right eye vision nil.

Left eye vision=20/40.

The right eye was soft and atrophic. There was a cyclitic membrane in the papillary space with adhesions between the iris and lens. Because of the right eye being a degenerated and irritable eye, and of the possibility of it exciting sympathetic ophthalmia in the fellow eye, an immediate enucleation was advised.

A simple enucleation was performed under local anaesthesia the following day, and the eye sent to the laboratory for examination. She gave a history of having had anti-luetic treatment, but blood Wassermann was reported negative.

Much to our surprise, the laboratory reported a melanotic sarcoma of the choroid which almost completely filled the vitreous space. She was heard from within the past month and is in perfect health.

Pathological Report: "Tissue: Sections of tumor show a fairly cellular structure composed of irregular spindle and polyhedral cells having large and for the most part deeply staining nuclei, many of which have vacuoles. The entire masses show infiltration with leucocytes and several areas of degeneration are well marked. Mitotic figures are seen. A moderate amount of pigment is seen irregularly scattered throughout the mass.

"Diagnosis: Sarcoma with degeneration.

Dr. Maurice Selinger."

Eyes have been removed for sarcoma of the choroid when they contained only pseudotumors, and the management of cases in which the diagnosis is in doubt has been well summarized by Jackson,[6] who says: "So long as the mass does not increase, watchful waiting is justified, if the eye still retains vision. If the tumor is malignant, early removal is to be recommended. But for a choroidal sarcoma in the first stage, the risk from a few weeks' delay until it shows unmistakable progress is problematic, and scarcely to be weighed against the loss of a useful eye on a doubtful diagnosis. If the affected eye is already hopelessly blind, that is another matter; such an eye should be removed on the mere suspicion of malignancy. But for a seeing eye, true conservatism requires careful observation, with full records of the conditions present, and delay until time makes a more positive diagnosis possible".

In conclusion, I wish to make the following observations:

1. I do not feel that we can be conservative in our treatment of blind, painful and usually disfiguring eyes, although they may not present anything to make the surgeon even suspicious of malignancy. It would be far better to remove hundreds of these eyes without encountering a malignancy, than to allow a single patient to meet death as a result of our conservatism.

2. The importance of routine examination of the fundus is only emphasized by the finding of a sarcoma in its earliest stages in an apparently normal eye.

3. Careful notes on repeated observations of suspicious pigmented deposits in the choroid should be a routine procedure, since they have been found to be the forerunners of sarcomata in some instances.

4. Choroidal sarcoma in its early stages may stimulate an exudative choroiditis, and hence should be considered a possibility in those cases which *do not clear* up under appropriate treatment.

5. It is quite evident that early diagnosis and prompt and radical operation are essential conditions to success in handling these cases.

References.

1. de Schweinitz, G. E.: Tr. Coll. Phys., Phila., 1924. 3. s. XLVI, 332.
2. Kipp, C. J.: Tr. Am. Ophth. Soc. Hartford, 1901. IX. 332-335, 1 pl.
3. Walterhofer, F.: E n Melarosarkom der Aderhaut in phthisischen auge 8. Jena, 1908.
4. Nettleship, E.: Tr. Ophth. Soc., U. Kingdom, London, 1903-4, XXIV, 93-102.
5. Ball, J. M.: Modern Ophthalmology, 1926, Vol I, 615.
6. Ball, J. M.: Modern Ophthalmology, 1926. Vol. I, 614.

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"Success is failure turned inside out—
The silver tint of the clouds of doubt,
And you can never tell how close you are,
It may be near when it seems afar;
So stick to the fight when you're hardest hit—
It's when things seem worst that you mustn't quit."
—*Selected.*

MULTIPLE PAPILLOMA OF THE GALL-BLADDER—REPORT OF A CASE ASSOCIATED WITH DUODENAL ULCER.

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Benign tumors of the gall-bladder are considered to be of rare occurrence by writers of surgical and pathological text-books. Even Ewing, in his monograph on "Neoplastic Diseases," fails to mention the subject. However, in 1914, Irvin and McCarty found one or more papilloma in 85 of 2,168 gall-bladders examined by them, and C. H. Mayo, in 1915, reported 107 cases of papillomatous disease of the gall-bladder found in 2,538 cholecystectomies. Abell, in 1923, reported finding eight benign tumors in 288 gall-bladders examined routinely.

Before these publications, a number of interesting case reports had appeared in the literature. Sutherland, in 1898, reported an adenomyoma, Ringel, in 1899, a papilloma, and Bishop, in 1902, described a benign tumor the size of a child's head arising from the gall-bladder. Mayo Robson described an adenoma in 1905, and Mayer, in 1911, reported the case of a papilliferous tumor occupying the entire gall-bladder.

Papillomata arise from the mucosa of the intestinal tract with comparative frequency, the villous type being most often observed. Irritation leading to overgrowth of surface epithelium, hyperemia and dilatation and elongation of blood vessels give rise to a large series of inflammatory polyps, and these lesions not infrequently pass into true tumors.

The clinical course of a papilloma is usually benign and its growth capacity is usually limited.

Benign tumors of the gall-bladder are usually not suspected before operation. The clinical picture presented is that of cholecystitis and cholelithiasis. Calculi may or may not be associated with the tumor.

The following case of multiple papilloma of the gall-bladder associated with ulcer of the duodenum has recently come under our observation.

Case Report

The patient is a white man, 46 years of age, married, and a cabinet maker by trade. Family history is unimportant. Father died of pneumonia, and mother is alive and in good health. No history of cancer. Past history is also unimportant. The patient has had the usual diseases of childhood. No history of typhoid fever. Had mumps at the age of thirty-nine.

For the past sixteen years the patient has suffered from acid eructations and "heart burn" after the ingestion of certain articles of food, such as tomatoes and cabbage. About two and a half years ago, he began to have attacks of pain and soreness in the epigastrium and right upper quadrant of the abdomen. These attacks at this time occurred every four to six weeks and lasted only for a few hours. The patient did not notice that there was any relation of these attacks to his meals or the ingestion of any particular kind of food. Eating would sometimes relieve pain, but rest seemed to do the most good.

Attacks increased in frequency and severity, first every four or five days, and, finally, the patient suffered almost constantly. If patient worked after meals, attacks would come on in thirty to forty minutes. Pain was accompanied by dizziness and at times the patient would faint. Several times during these attacks the patient was jaundiced. Nausea was pronounced, but vomiting occurred only rarely. The patient did not observe any clay colored or tarry stools, and he was not constipated. In September, 1926, he was forced to quit his work, which he did not resume until January, 1927. He worked until June, 1927, and was admitted to the hospital on July 18, 1927.

On physical examination, the patient appeared to be fairly well nourished and he weighed 146 pounds. Examination of the head and neck showed nothing abnormal. No pathology was found on examination of the chest. The heart was slightly enlarged and the aortic second sound was accentuated. There was marked tenderness and rigidity over the gall-bladder region. There were no palpable masses. Reflexes were normal and the extremities showed nothing of interest. On admission, the pulse rate was 76 to the minute and the temperature was 99° F. Blood pressure was 170 mm. systolic and 82 mm. diastolic. Blood examination showed 85 per cent hemoglobin, and 10,500 leukocytes with 80 per cent polymorphonuclear leukocytes. Examination

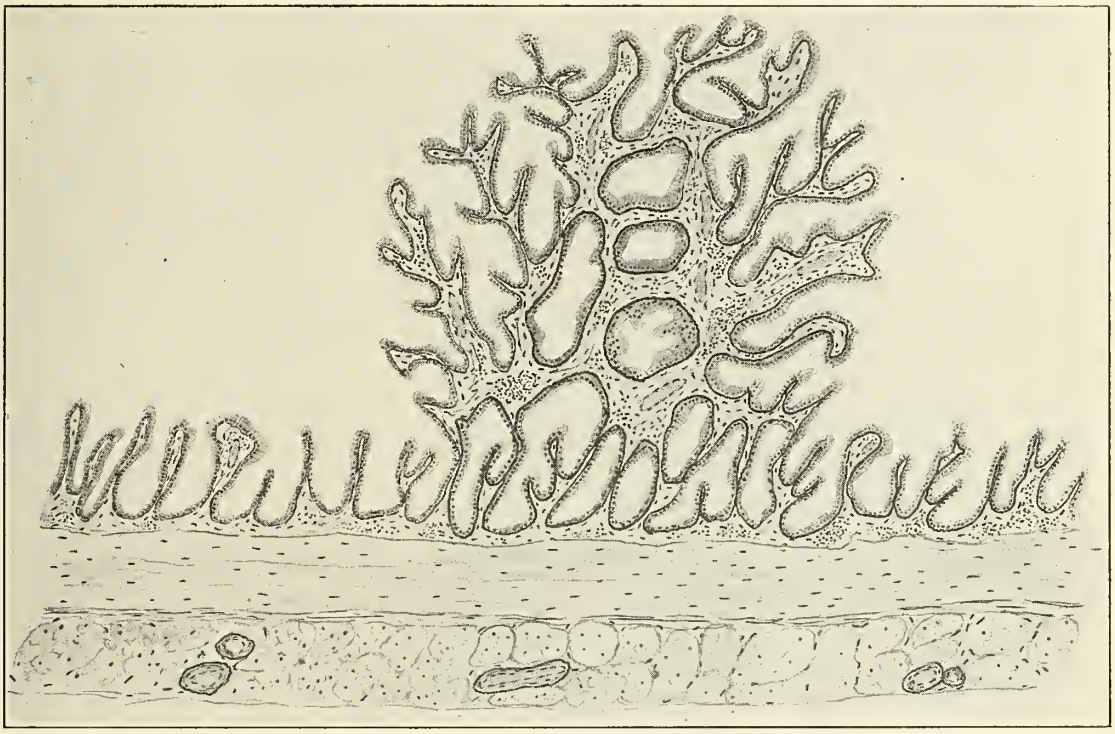
of the urine, with the exception of a slight trace of albumin, showed nothing abnormal.

X-ray examination done previous to admission showed no abnormalities of the gastro-intestinal tract with the exception of a hyper-peristalsis of the stomach. Examination of the gall-bladder before ingestion of the dye showed no pathology, but thirteen hours after ingestion of the usual amount of tetraiodo-phenolphthalein, the gall-bladder failed to fill with the dye.

With a diagnosis of chronic cholecystitis and a tentative diagnosis of gastric ulcer, the patient was operated upon July 19, 1927 (L. G. R.). The abdomen was opened through a high right rectus incision. The wall of the gall-bladder was somewhat thickened and of a slate gray color. There was a white puckered ulcer of the duodenum just distal to the pylorus. The lumen of the intestine did not appear constricted, and there were no adhesions about the gall-bladder or ulcerated duodenum. The appendix was somewhat thickened and kinked at its mid-portion. It was removed in the usual manner. The gall-bladder was removed from above downward and the cystic duct doubly ligated. A drain was inserted down to the stump of the cystic duct and the abdominal incision was closed in layers.

The gall-bladder, upon opening it, was found to contain a quantity of thick bile with much mucus. There were no calculi. Arising from the mucous lining were seven small wart-like excresences, measuring about 3 mm. in diameter. These papillary out-growths were very friable and easily broken from the mucosa. There was no uniformity of distribution of the growths.

Microscopically, it was seen that the mucosa alone was involved in the above described growths. The tumors were composed of branching papillary projections rising above the level of the normal mucosa (Fig. 1). The epithelium covering these villae was of the tall columnar type and had a definite basement membrane. The stroma was made up of a watery connective tissue and was not very cellular. The blood vessels were thin-walled and congested. The stroma was infiltrated by groups of round cells. The entire gall-bladder wall was somewhat thickened and the mucosa especially showed evidences of chronic inflammation.



Microscopic section of papilloma and portion of gall-bladder wall.

Discussion

Braithwaite, in 1923, pointed out the possible relationship between the causation of gastric and duodenal ulcer and inflammatory conditions about the ileocecal angle. Appendicitis has been prominently mentioned by surgeons as an associated condition and as a possible cause of gall-bladder disease. It is interesting to note that, in the case above described, a diseased gall-bladder, a duodenal ulcer and a chronically inflamed appendix were all present.

The relationship of chronic irritation, mechanical, chemical or infectious, to the formation of papillomata has already been mentioned. It is often difficult to determine if these tumors are true neoplasms or inflammatory hyperplasias. The gall-bladder herein described well illustrates the relation between chronic inflammation and the formation of papillomata.

Due to the persistence of the exciting factors, progressive formation of new tumors and malignant changes may take place. The development of malignancy is probably much more frequent than a corresponding change in the growth capacity of the tumor. The gradual formation of a benign papilloma into a malignant neoplasm has been fully demonstrated in the cervix uteri, urinary bladder, larynx, and other locations, and has usually followed the trauma of an incomplete operation or prolonged chronic inflammation.

Summary

1. Benign tumors of the gall-bladder are not as infrequent as the text-books and monographs discussing gall-bladder disease would lead one to believe.

2. The relation between chronic irritation and the formation of papillomatous tumors has been fully demonstrated. Irritation of the mucous membrane gives rise to a large group of inflammatory polyps which not infrequently pass into true neoplasms. By trauma of an incomplete operation or prolonged chronic inflammation, the growths may become malignant.

References.

1. Abell: Annals of Surgery; 1923, Vol. 77, p. 276.
2. Bishop: *Lancet;* 1901, Vol. 2, p. 22.
3. Braithwaite: *Brit. Jour. of Surgery;* 1923, Vol. 11, p. 7.
4. Ewing: Neoplastic Diseases. W. B. Saunders & Co., 2nd Ed. 1922.
5. Irvin and McCarty: Collected Papers of the Mayo Clinic, 1914, p. 179.
6. Mayer: *Jour. Med. de Brux;* Vol. 16, p. 85, (suppl.) 1911.
7. Mayo, C. H.: Collected Papers of the Mayo Clinic; 1915, p. 249.
8. Mayo-Robson: (Cited by Abell).
9. Ringel: *Arch. of Clin. Chir.;* 1899, Vol. 59, p. 161.
10. Sutherland: *Glasgow Med. Jour.;* 1898, n. s., Vol. I, p. 216.

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TUBERCULOSIS IN CHILDREN.*

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The subject of tuberculosis in children is so vast and intricate that only its bare skeleton may be outlined here. For the sake of clarity and brevity this will be presented in somewhat dogmatic statements, though I am fully aware of the fact that many of these are still controversial topics in the literature.

Tuberculosis is a disease of childhood. Among 4,003 infants under 2 years of age in two hospitals and clinics in New York city, the incidence of tubercular infection was 11.4 per cent. Chadwick, in Boston, showed that 8 per cent of the underweight children of that community presented evidence of tuberculosis. Levinson, in Chicago, studied 300 children, most of whom had come in contact with tuberculosis. One hundred and forty-one reacted positively to the tuberculin test. Gittings and Donnelly published statistics on the Pirquet reaction, obtained from the records of the Children's Hospital of Philadelphia. Their results demonstrate the high percentage of tuberculous infection in childhood. It will serve no practical purpose to multiply the number of references on this subject. It is now universally recognized that a considerable percentage of all children in the smaller and larger communities react positively to tuberculin tests, which means tubercular infection. In this sense only is the statement to be taken that tuberculosis is a disease of childhood.

Every manifestation of the disease in the adult is merely a development and metastasis of a lymph gland infection during childhood which may lie dormant for a number of years until certain favorable factors present themselves for its activation. These factors are now taught to be grippe, whooping cough, measles, and exudative diathesis. A massive infection with virile tubercular bacilli in the

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normal adult, or an ordinary infection during a period of temporary loss or lowered immunity in the adult, may also cause the implantation of a new tubercular focus.

The sources of infection are the human and the bovine type of tubercular bacillus. Other types of tubercular bacilli are of no practical importance. The mode of infection for the bovine type is by means of milk through the gastrointestinal tract. The mode of infection for the human type is by (a) contact—kissing, touch, utensils; (b) droplet—direct contact or inhalation.

A sharp division between the type of lesion caused by the human type of tubercular bacillus and that caused by the bovine type is not justified. Munro, of England, reports five cases in which the bovine type of tubercle bacillus was coughed up. Bovine type bacilli have been obtained by him in eight instances from the tracheo-bronchial glands of children who have died from tuberculosis in twenty cases which have been investigated. These bovine bacilli must have traversed the lungs before they reached the tracheo-bronchial glands, and in most instances there was plain evidence at the postmortem that the route of infection was by the abdominal glands.

One of the most helpful conceptions to the understanding of tuberculosis in children was introduced by Franz Hamburger working in the children's clinic at Vienna. The anatomic basis of this conception is the classic work of Albrecht and Ghon, of the Vienna school.

Tuberculosis of infants and children is divided into three stages. *Stage one* consists of the primary focus or the original point of implantation of tubercle bacilli. The focus is practically always in the periphery of the lung. After very careful postmortems on 1,060 tubercular children, Albrecht could find only seven with primary intestinal tuberculosis. Ghon, in 189 cases, could find only three with primary intestinal tuberculosis. A few years ago Ghon and Wertheimer found among 395 necropsies on tuberculous children only six cases with a certain extrapulmonary primary infection (four intestinal, one nose and one middle ear), and three cases in which the primary lesion could not be determined. This primary focus may be very small, almost invisible, or large; may be single or multiple in one lung or in both lungs. As soon as this implantation in the lung tissue occurs, the regional tracheo-bronchial glands become inflamed, enlarged and present the anatomico-pathological and clinical complex known as bronchial glands or hilum tuberculosis.

During infancy the primary focus may extend to the surrounding lung tissue and cause cavitation. In older children the infection is limited to the primary focus plus the regional lymph gland involvement. If the interplay between the infection and the immune powers of the child is favorable to the latter, all that will remain of the tubercular infection will be anatomic signs in the lung and the regional lymph glands. It is also conceivable that a tubercular infection in the primary stage may be healed without even leaving any anatomical traces, leaving, however, a biological trace as manifested in the reaction to tuberculin.

The *second stage* of tuberculosis in children is the generalization of the tubercular process by means of extension of tubercular bacilli through various channels. The multiplicity and polymorphism of the tubercular lesions in childhood are simply determined by the colonization and implantation of tubercular bacilli issuing from the primary focus. This second stage of tuberculosis may manifest itself in children years after the implantation of the primary focus if, for any reason, the immunity which the system had elaborated during the sytemic reaction to the primary focus became lowered.

The younger the child, the greater the tendency for the generalization of the process. Tubercular meningitis and miliary tuberculosis, so common between the ages of 2 and 6, is merely the generalization of the infection by way of the blood stream from the primary focus. The various manifestations of tuberculosis of the skin, mucous membranes, serous membranes, bones, joints, uro-genital apparatus, brain and other organs and parts of the human body take place through the localization in these parts of tubercular bacilli which are carried in the general circulation. What determines the particular localization is unknown. Perhaps the particular point in which the germs localize is a *locus minoris resistentiae*, which, again, does not explain much. Tuberculosis of the lymphatic glands is caused by the extension of bacteria by way of the lymphatics from peripheral foci. For instance, tubercular glands of the neck may have become infected from tubercular bacilli in the

tonsil. Yet the focus in the tonsil may not necessarily be the primary one. It is possible that the tubercular germs have landed into the trachea and faucial cavity from a broken down primary focus in the lung tissue. Similarly, intestinal tuberculosis with the regional mesenteric gland involvement must not necessarily be caused by a primary focus in the intestines due to the bovine type of tubercular bacillus. Tubercular bacilli from the primary focus in the lungs (whether it be from the focus in the periphery of the lung or from its regional bronchial gland) may, by caseation of the focus and erosion of a small bronchus, be coughed up and swallowed and thus initiate intestinal tuberculosis.

The *third stage* of tuberculosis in children is the chronic pulmonary tuberculosis as we see it in the adult. Only about 1 per cent of all cases of chronic pulmonary tuberculosis occurs in children under 14 years of age. This adult type of tuberculosis, whether it occurs in a child previously known to harbor a tubercular focus or for the first time in the adult, is now taught to take place from a previously existed primary focus in the lungs or the tracheobronchial glands (the primary complex).

We may now tabulate the most common manifestations of tuberculosis in children under the various stages:

STAGE I.

Primary focus, plus regional lymph glands (practically always in the periphery of the lung).
Cavernous phthisis of infancy.

STAGE II.

Bones,	Mucous membranes.
Joints.	Pleurisy.
Peritoneum.	Uro-genital system.
Intestines.	Miliary tbc.
Glands.	Meningitis.
Skin.	

STAGE III.

Chronic pulmonay tbc. of later childhood.
Pulmonary tbc. in the adult.

The avenues or channels through which the tubercle bacilli leave the primary focus to produce the polymorphous lesion of the secondary stage and the lesions of the tertiary stage may be designated, by way of summary, to be:

(a) Hematogenous.
(b) Lymphogenous.
(c) Bronchiogenous.

DIAGNOSIS

I know of no harder problem in the whole range of medicine than the diagnosis of tuberculosis during childhood. In a schematic way, the key to diagnosis may be outlined as follows:

(a) *History:* By this we mean a history of contact with some tubercular member in the family or tubercular stranger living in the family. The younger the child, the more dangerous is contact infection.

(b) *Inspection:* A knowledge of special forms and characteristic localization of secondary manifestations of tuberculosis will aid one to make a diagnosis (tuberculides, phlyctenae, glands, joints, etc.)

(c) *Irregular Prolonged Periods of Fever:* This sign, so valuable in the diagnosis of tuberculosis in the adult, is of lesser importance during childhood. Infants and children, as it is so well known, will show a rise in temperature at the slightest provocation.

(d) *Physical Examination of Chest:* There is a great difference of opinion as to what may be adduced from such an examination. Personally, I am unable to evaluate properly the various highly specialized physical signs described. There are so many conditions in children that will give modified ausculatory and percussory signs over the hilus region that one may be at a loss to know how to interpret the findings.

(e) *Tuberculin Reaction:* In spite of the enormous amount of data on this subject, there is still a great deal of confusion in the minds of many concerning the use, value, and interpretation of a tuberculin reaction. I shall briefly mention the practical accepted notions concerning tuberculin reactions.

The easiest and most commonly used tuberculin test is the Pirquet cutaneous reaction. Two small drops of tuberculin "O. T." (Koch's Old Tuberculin) are placed on the previously cleansed flexor surface of the forearm at a distance of two inches. With a special instrument (the Pirquet borer), a point of the skin in the middle between the two drops is scarified by rotary motion; no blood is drawn by this motion. The same rotary scarification is made in the center of each drop of tuberculin. The central scarification serves as the control. After a few minutes the forearm is dressed with a piece of cotton and adhesive plaster over it. Two days after the result is examined. The central scarification serves as control. An area of reddening, inflammation and indura-

tion of more than ½ cm. in diameter would be considered a positive tuberculin test.

The Mantoux test is an intracutaneous tuberculin reaction. Tuberculin, 0.1 to 1 mg., is injected into the skin of the forearm as in a Schick test. The Mantoux test is more delicate and sensitive than the Pirquet cutaneous test, but it gives a greater percentage of false (traumatic) reactions and may also cause constitutional symptoms. The intradermal (Mantoux) test should be done when the cutaneous (Pirquet) test is negative.

A positive tuberculin reaction during the first two years of life means active tuberculosis. This statement may be accepted without qualification. Later in life a positive tuberculin test means infection which may or may not be active. A negative tuberculin test (except during or immediately after measles, tubercular meningitis, miliary tuberculosis and extreme conditions of cachexia), repeated and verified by the intradermal method, means *no* tubercular infection. There are a great number of conditions in children where a certain negative tuberculin test is of extreme *positive* value.

(f) *X-ray:* It is questionable whether juvenile tuberculosis can be diagnosed without the aid of the roentgenogram. Indeed, the modern knowledge of tuberculosis in childhood could not have been accumulated without the aid of roentgenology. No single method of examination, however, will be sufficient to make a positive diagnosis. All the methods of diagnosis (contact history, inspection, physical examination, observation, tuberculin reaction, X-ray) or a few of them properly interpreted will have to be drawn upon for a proper diagnosis. A few cases may serve as illustration:

Baby G. N., 11 months. Loss of appetite, pallor, chronic cough. Positive Pirquet. Active tuberculosis was diagnosed. At 17 months this baby died with tubercular meningitis.

M. H. E. (991) was first examined nearly 3 years ago when 6 years old. The positive findings then were enuresis nocturna, slightly underweight, mild secondary anemia, infected tonsils. A single Pirquet test was negative. The child was seen recently. Subjective symptoms are practically absent, with the exception of a mild, fleeting elevation of temperature. The child is 11 per cent underweight and slightly anemic. A single Pirquet test was strongly positive (area of induration more than 1 cm. in diameter). On fluoroscopy a minute *primary* focus could definitely be established in the periphery of the right lung. A diagnosis of latent tuberculosis was made. Should the child develop any subjective symptoms, they may rightly be attributed to activity of the primary focus.

G. F. (1389), 2 years and 5 months girl in perfect nutritional condition. The positive findings were suppurating right inguinal glands and painless moderate swelling of the left ankle joint. Pirquet test was positive. X-ray of chest was negative. X-ray of bones also negative. There is no question that the inguinal adenitis and the ankle swelling are to be viewed as secondary or metastatic manifestations of tuberculosis. The child was sent for treatment to the University Hospital and complete recovery was reported, as far as it could be determined.

The value of a positive tuberculin test or of a definite negative one in the presence of enlarged mediastinal glands is conclusive. In the differential diagnosis of various joint conditions, a repeated negative tuberculin test is of great value in excluding tuberculosis.

The treatment of tuberculosis in children may be reduced to a few simple principles. Rest, diet, fresh air and sunshine are the essential things in the treatment. The rest may be absolute or modified, depending on the condition of the case. Sunshine will also include artificial sources, especially in the treatment of localized areas (glands, bones, fistulae, etc.). The essential feature of the dietetic treatment consists in diets rich in protein and fat and poor in carbohydrate. At the Pirquet Clinic, Vienna, the dietetic treatment of juvenile tuberculosis is elaborated into an organized system. The essential features of that system consist in a detailed knowledge of methods of food concentration, the building up of a food tolerance from the theoretic basal requirement up to the maximum that the digestive system will be able to handle without breaking down, and a practical flexible method of quantitative food dosage to suit the manifold clinical situations.

X-ray treatment has a place in the treatment of surface gland tuberculosis and hilum adenopathy. As regards tuberculin treatment, opinions are divided. No less an authority than Czerny, Director of the Children Clinic, Berlin, believes that those tubercular children who do well under tuberculin treatment do so

in spite of it, not because of it. Czerny uses also daily injections of horse serum in cachectic tubercular children. He believes that the foreign protein stimulates the metabolic processes of the body and an improved state of nutrition results.

I shall conclude with a word concerning the prognosis of tuberculosis in children. The prognosis will be determined, as V. Pirquet stated, by three factors:

(a) Age of the child. The younger the child, the worse the prognosis. The process has a tendency to generalize itself with fatal results.

(b) Location of lesion. Glandular tuberculosis, whether belonging to the primary focus or the result of a metastasization of the primay focus, will offer the best outcome. The outcome of any other secondary manifestation will depend on the extent of its distribution and the nature of the tissue it affects. Thus, miliary and meningeal tuberculosis are invariably fatal. Localization in certain bones or soft organs may have a more favorable issue.

(c) Condition of nutrition. If the condition of nutrition is poor, or if one does not possess the knowledge and technique of raising the nutritional condition of the child, the outcome will be unfavorable.

A new field—which seems to be promising—in the prophylaxis against juvenile tuberculosis has been opened up by Calmette, in France. It is claimed by workers in this field in France and other countries of Europe that it is possible to vaccinate against tuberculosis by the administration of a culture of live bacilli called BCG (bacillus Calmette-Guerin). This organism is of bovine origin and has been attenuated so that it has lost its tuberculogenic properties, but retains its antigenic powers. It finds its greatest usefulness in newly born infants. The vaccine must be fresh. The Pasteur Institute at Paris gratuitously supplies the vaccine to physicians in France. The Greek Red Cross has been vaccinating new-born infants with Calmette's vaccine and thus far brilliant results have been reported from its use. In this country the method of Calmette is being tested out by the New York Board of Health under the close supervision of Park. While it would seem wise to hold in check uncontrolled enthusiasm concerning new therapuetic procedures, it seems probable that Calmette and his co-workers at the Pasteur Institute at Paris have opened up a new era in the eradication of tuberculosis.

OCCIPITO-POSTERIOR POSITION.*

By H. G. MIDDLEKAUFF, M. D., Weyers Cave, Va.

The occipito-posterior position, a subject which is discussed very often because of its importance and common occurrence, demand frequent consideration by all who practice obstetrics. The early recognition of this position and its correction, when necessary, will materially shorten the time and increase the safety of many labors. The frequency of occipito-posterior positions to the total of vertex presentations varies with different series, but it is around 30 per cent in the beginning of labor. The mechanism of occipito-posterior is essentially the same as in the occipito-anterior position except that engagement is very apt to be delayed because the broad part of the head impinges upon the promontory of the sacrum, and in occipito-posterior the occiput has to rotate 135 degrees anteriorly instead of 45 as in occipito-anterior position.

This wide excursion of internal anterior rotation Nature usually accomplishes readily and unassisted, which fact should always be remembered, thereby preventing meddlesome obstetrics. However, in the author's humble opinion, labor should not be allowed to drag on for hours, waiting for Nature to accomplish what the physician can do safely in a few minutes.

Theoretically, the diagnosis of occipito-posterior position is easy, but all will testify to its difficulty in practice, especially in obese women. With the heart sounds heard best low in the flank, but usually sounding far away, with the shoulder felt far back from the midline, and the small parts somewhat anteriorly, and the forehead felt under the opposite pubic ramus, one should strongly suspect an occipito-posterior position. However, the heart sounds may sound unusually loud and on the same side as the forehead, due to marked deflexion of the head, causing the mistaken diagnosis of face or occipito-anterior position. Rectal examination reveals the head high up, the broader diameter of the head and the small fontanel being against the rectum, with the large fontanel either near the center of the pelvis or under the pubic ramus according to the

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amount of flexion that has taken place. A slow tedius labor with late engagement, with irregular pains both in time and strength, slow descent, and accompanied with the findings given above, should almost make the diagnosis of occipito-posterior position positive. Under the most aseptic precautions, vaginal examination is now indicated. This reveals a slowly dilating cervix, with most of the pressure being exerted on the posterior lip, the head is high up, while the small fontanel is in the posterior half of the pelvis and the large one in the center of the pelvis or under the pubic ramus. The sagittal suture is in either the right or left oblique diameter. A large caput succedaneum is usually there to obscure these findings, in which case search for an ear will have to be resorted to.

A positive diagnosis of occipito-posterior having been made, the prognosis should be considered, while waiting to see if Nature will accomplish anterior rotation. If anterior rotation is arrested or posterior rotation takes place, both mother and child will suffer in several ways unless the child is small or the mother is multiparous, but even then serious trouble may arise. For the mother there await exhaustion and sepsis, severe lacerations, and post-partum hemorrhage from uterine inertia. For the child there await asphyxia and cerebral injury. DeLee thinks that this complication causes more fetal deaths than contracted pelvis. If the occiput seems to be rotating anteriorly with the pains, or is easily pushed in that direction by the examining finger, anterior rotation is to be expected spontaneously when the uterine contractions have become sufficiently powerful.

If the cause of the posterior position is amenable to treatment, this should be treated first, leaving the correction of the position to Nature if possible. All of the causes are not understood, but the following are the more important ones: 1. Flat pelvis; 2. Primary brachycephalia; 3. Pendulous abdomen; 4. Large pelvis; 5. Prolapse of an arm in front of the occiput; 6. Anything that would prevent anterior rotation of the head or descent of the child's body, such as the placenta, tumors, scars, a full rectum or bladder; 7. Exhaustion of the uterine muscle; 8. Abnormalities in configuration of the bony pelvis; 9. Abnormal pelvic floor.

The treatment of persistent occipito-posterior position requires good obstetrical judgment as well as skill. If the head is not engaged, it is best not to interfere directly. If non-engagement is due to weak pains, having the woman walk around the room is a great assistance. By all means try to prevent rupture of the membranes. If the pelvis is not considerably contracted and there is no other condition present which requires treatment in itself, watchful waiting should be done until a definite cause for interference arises, true exhaustion being considered a cause.

If no progress is being made after waiting a sufficient length of time, and danger is anticipated but not necessarily present, and engagement is held up on account of non-dilatation of the cervix, a safe method of dilatation should be instituted. Here it might be said that manual dilatation without lacerations is considered impossible. Having secured dilatation of the cervix, anterior rotation of the head and engagement should then be attempted by manual manipulation, or anterior rotation should else be brought about by manual manipulation and by engaging the head in the pelvis with forceps, leaving the completion of labor to natural forces, which ideal result is to be expected if other conditions are right. This procedure is much safer than to complete the labor with forceps at this time, or than version and extraction, except, possibly, in multiparous women who have plenty of room in their pelves.

After engagement has taken place and the cervix is dilated, if anterior rotation and descent are arrested, other treatment is required. Having the woman lie on the side to which the occiput points often favors rotation. If the pains are weak and walking does no good, putting the woman in a sitting position with the thighs markedly flexed on the abdomen will favor descent and increase the diameter of the outlet as well as increase the expulsive power, but too much force must not be brought to bear, especially before correction of the position.

If the proper aseptic technic has been instituted throughout the labor, fear of infection should not prevent the accoucheur from practicing his art, because the severe exhaustion brought on by prolonged and ineffectual labor will enhance infection as much as manual interference will.

When correcting an occipito-posterior into

an anterior position, it must be remembered that, unless the child's body is rotated also, the head will not likely remain in the desired position. Therefore, internal and external manipulation must be combined. The method which has been most successful in the author's experience will be described. With the woman sufficiently well anaethetized to give relaxation, but not entirely abolishing uterine contractions, she is placed on a table high enough for the operator to work efficiently. Using the right hand in R. O. P. and the left hand in L. O. P., the hand is inserted into the birth canal as far as is necessary, so that the fingers and palm rest on the anterior side of the head and face in front of the median axis of the child's head. The thumb extends across the top of the head and lies on the side of the vertex behind the median axis of the head, this being in the region of the lambdoid suture. While the internal hand disengages the head if necessary, and flexes and rotates it, the external hand rotates the body by means of traction on the shoulder. When rotation has been accomplished, the internal hand leads and the external pushes the head into engagement in the desired position, holding it until a few pains have exerted their effect. Sometimes it will be necessary to insert the hand past the child's face to the posterior shoulder and with the tips of the fingers rotate it past the promontory of the sacrum, the palm of the hand turning the head with it, bringing the occiput anteriorly. Whether or not forceps should be applied now depends on the other conditions present, but generally speaking, Nature should be given another chance. However, if forceps are necessary before the perineum has had an opportunity to become sufficiently relaxed, an episiotomy will accomplish much in time and in preventing injurious lacerations.

The contraindications for this procedure are: 1. Marked disproportion; and 2. Uterus being near the rupturing point.

BIBLIOGRAPHY.

DeLee—Third Edition.

HABITS IN CHILDREN AND THEIR INFLUENCE ON BEHAVIOR.*

By ALFRED GORDON, M. D., Philadelphia, Penn.

To discuss "the child" is an endless task. Its characteristics, tendencies, emotional life, development,—finally, its behavior and conduct—are all such vast chapters of study and observation that each of these elements will require a separate volume in order to present them in a more or less complete form. The child's age is the period of life when foundations must be laid for the building up of a physical, mental, and emotional structure which will direct in one way or in another the individual's relation to other members of the community in which he lives and which will contribute to the happiness and progress or else to the misery and failure of his surroundings. It is at that age that initial direction is acquired for those forces which will guide the future man or woman in their adaptations in the struggle for existence. Adaptation implies the cooperation of a great many units of the individual's mental and emotional characteristics. There must be a constant conflict among the latter with the end result either of victory or of collapse. This will be manifested in the individual's "behavior." Behavior then is the resultant of the individual's life adaptations. To cover in one discourse all important forces which influence behavior will necessitate considerable time. Among the large number I have selected only a few because they present a special practical interest and a serious problem for the parents. In discussing them, I will not fail to bear in mind that I am addressing an assembly of lay persons and consequently will avoid terms, interpretations and explanations of an academic character.

In the life history of a child there are a few special features which frequently give the parents considerable concern. I have reference to "special habits" which the child acquires before the school age and during the latter. I shall not dwell upon a few habits observed in early infancy, such as thumb-sucking or tongue-sucking, which parents frequently encourage to prevent the child from crying, thus obtaining rest. I shall not arrest your attention on teeth-grinding or nail-biting which, although they have their special meaning, nevertheless are not of sufficient practical importance to elaborate upon. I will entertain you with more serious manifestations which occur in childhood beyond infancy and which may have a direct and grave influence upon the formation of the child's character and future behavior.

When a child develops a desire for telling

*Address delivered in Philadelphia during the Child Health Week, May 11, 1928.

"lies," which desire becomes eventually a strong habit, the situation is serious. This phenomenon is the result of several causative factors, chiefly of inheritance, but, let us remember, also of environmental circumstances. Parents and teachers should not ignore the fact that it is important and it is possible to prevent the full development of the tendency for lying the moment it is first noticed, because it is susceptible to treatment. The common belief that lying in a child is a necessary evil is a grave error. The lie may be at first only an occasional occurrence, but when it is permitted to repeat itself, it may gain such a strong foothold and become such a deep-seated habit that it might become difficult to be eradicated and this pernicious habit is carried to adolescence and manhood or womanhood, affecting daily life in all its phases and leading to very serious consequences, with criminality as a result. Permit me, therefore, to present to you a few hints which may be helpful in the management of this abnormality. First of all, it is necessary under all circumstances and conditions and as early as possible to be frank and truthful with children. Should the child commit his first or a repeated offense in telling a deliberate untruth, no undue punishment should be administered. In fact, punishment in all such cases does no good, because it creates and develops fear, which by itself is the cause of lying. Thus, the child will be obsessed on one hand by fear of being punished for telling lies and on the other hand he will tell lies to avoid punishment. He will live in a vicious circle. There is another important warning to the parents and teachers when they are confronted with evident children's lies. It would be very wise and prudent not to question such children too closely on the subject of their lies. Unless the questioning is done skilfully and intelligently, such a procedure may lead to forced misstatements on the part of the child, which eventually may develop into deliberate and conscious deception and fraud and thus prepare the individual for a life of delinquency and all kinds of criminality. Proceeding further, I may also caution you against an unnecessary and perhaps harmful method in dealing with lies in an immature child. That is, preaching and pointing out to this undeveloped bit of humanity the evils of lying is not only useless but it may become harmful for the following reasons: First, in so doing we may exaggerate or magnify the most insignificant deviation from the truth. Second, we may suggest to the child undesirable thoughts which otherwise would have never perhaps entered the child's mind. and, as you know, a child is extremely susceptible. When parents and teachers keep on admonishing the children with: "You must not do this or that, you must not speak so and so," such a procedure is by itself a suggestion to the child for violating prohibited acts. On the other hand, when the child is taught and shown how to control himself on every occasion, and how to own up to a mistake or to a wrong act committed by him, when all that is done in a kindly and intelligent manner, the child's confidence will be gained and the results will be most gratifying in the struggle against repetition of falsehoods. In our attempts to correct the habit of lying in children, we must invariably hold their attention close to reality and not to fantastic and abstract ideas on truth and untruth, because over-stimulation of their imagination may prevent them from discriminating the real and the unreal.

The second abnormal habit in children which may lead to grave consequence is "stealing." We all know that a child has no sense of personal property. Not infrequently we observe children wanting to go through the pockets of others. Some of them, when they are sent on errands, do not spend as much as they are told to do and keep the balance for themselves. Some bring home things which, they say, were found by them on the street. These are all examples of various forms of theft. They are all serious and even dangerous habits, as they mean encroachment upon another's private property or an aggression by himself toward another person. They mean the existence in the child of a strong pernicious desire to deprive another person of things to which he is not entitled or to attack the rights of other people. They mean that if this habit is maintained during childhood, grosser delinquent acts of a more serious nature will be committed later in youth and adult age, such as pocket-picking, purse-snatching, stealing unlocked property, burglaries, highway robbery, larceny of all degrees, forgery, passing worthless checks, etc. Not infrequently we see children supplied by their over-indulgent parents with ample pocket-money. If this habit is established and for one reason or another the

child should be deprived of further supply, he may resort to stealing in order to satisfy his taste or greed for luxuries developed by unreasonable parents.

The third form of habits in children which may lead to grave consequences is "truancy or vagrancy." It usually happens that during the day, when the child cannot find desirable companions for play or other purposes, he runs away either from school or from work. A poverty-stricken or an unhappy home with bad surroundings may lead the boy to abandon it temporarily and repeat the act so frequently that a habit becomes established. When the school teacher is unable to understand her pupils, especially the neurotic children, and handles them unreasonably either by exacting mental work for which they are not prepared or threatening or punishing them severely, such children will look for and find opportunities to run away from school. In some such instances I observed children leave their homes in the morning for school but never reach it, and go off with undesirable gangs in a different direction. Restlessness, irritability, nervousness and especially discontent either with their home or school made those children find a way whereby they could obtain satisfaction or at least relief and an outlet for their pent-up emotional forces. As a rule, these truant children spend their time in company of other young or older delinquents, and they fall into further delinquency in either case. Statistics show that truancy or vagrancy is a factor in over half of the cases of various delinquent offenses against society. Much can be done for these truant youngsters if parents would be sufficiently interested to make sacrifices of their time or to try to surround the children with desirable companions for whom they crave. Since truancy represents an effort to escape from an undesirable environment, it should be looked upon with grave concern. Punishing a truant child will accomplish nothing and does not solve the problem.

These few examples are chosen to show how vast and complex is the problem of dealing with children. Habits and especially bad habits are very difficult propositions for parents. They are the most potent factors in delinquency. A wrong act once committed may be repeated more or less automatically by force of habit and especially when it may bring pleasure or satisfaction. The more often the delinquent behavior is repeated and the more it is attended with pleasant circumstances, the more established becomes the habit. Moreover, a delinquent habit may persist long after the original cause of its existence has disappeared. We may even remove the cause which leads a boy to steal, pick pockets, lie, run away from home or school, but still the delinquent habits may remain because of habit.

Let me now point out to you with some emphasis some of the conditions which may contribute to the formation of undesirable habits and to delinquency. I will not dwell on bad inheritance. That instinctive and hereditary tendencies are the roots from which the physical, mental, and moral life develops, is a well-established fact. Not much can be accomplished in cases of children with inherent mental limitations, but personality and its component parts are also to a considerable degree molded by environmental conditions. It is on the latter that our efforts must be concentrated, as they are amenable to improvement. Among the environmental elements, "home" is the most potent. In considering home conditions, the following may contribute to delinquency:

1. Unsanitary features: They undermine the child's physical health and indirectly his mental health and, consequently, reduce his vitality and his power to control his behavior.

2. Crowded homes: There children frequently witness scenes between the elders which gives their immature minds suggestions for delinquency.

3. Material poverty, which may lead to lying and stealing. With poverty are closely associated ill health, over-crowding, neglect, ill-tempered parents and so-forth. Thefts of all kinds and hold-ups result from longing for food, clothing, shelter. Fifty-five per cent of young delinquents in London come from homes that are below the poverty line.

4. In some cases excess in material things permitted by over-indulgent parents leads to a lack of appreciation of values and poor self-discipline, with the result that the child may become incorrigible and commit offenses ranging from petty larceny, setting fires, burglary and even murder.

5. Disrupted homes, either through death of parents or divorce. In both cases the child loses necessary examples, guidance, discipline or affection, which all are so essential in his development. It was observed that 79 per cent

of delinquencies occur where the home was disrupted during the childhood of the individual.

6. Mental abnormalities of parents, bad habits of parents, such as drunkenness, immorality or criminal tendencies in the parents, are bound to have a pernicious effect on the children through the innate tendency for imitation, misguided teaching, disgust, antipathy against the home shame, a feeling of degradation, and loss of respect for parents. Lying, stealing, and running away are common occurrences, all resulting in gross delinquencies.

7. Ill treatment by guardians, foster-parents, or step-parents leads the child gradually to truancy or vagrancy; he then gets in with gangs, and thus drifts into delinquency. In all such cases a feeling of resentment develops in children against those people. Because of this feeling, their influence by work or example becomes insignificant. The child may become stubborn and this state will keep him from being benefited by the small amount of parental discipline. He will then remain a slave to his instincts and emotions.

8. Unhappy relationship between father and mother is a frequent cause of the child's unhappiness, which, if continued, will develop undesirable tendencies in him.

9. Finally, misdirected discipline is a frequent cause for delinquency. Over-indulgence or else over-restriction on the part of the parents makes the child react in an abnormal way. Desire for forbidden things becomes great and the child will seek satisfaction outside of home in a delinquent manner. Forbidding things in an unreasonable and inconsistent manner will react on the child so that he will oppose his parents in everything and it will make more intense his desire to do forbidden things until it gets the best of him. If severity and punishment are practiced, the child will seek satisfaction outside, with a bad effect on his behavior. Favoritism and injustice are promptly felt and resented by children. They lose respect for parents and seek compensation in abnormal ways. Nagging and creating fear in a child is dangerous for its physical and mental development. The fear fixes the undesirable tendency in its mind and it attempts to escape from it through some abnormal act.

All these factors must be borne in mind when we are confronted with cases of bad habits leading to delinquencies. No individual case can be treated in a satisfactory manner without adequate knowledge of all causes of the trouble. Facts must be obtained from many sources.

In concluding the few thoughts presented here, I wish to emphasize the fact that all I said is only a small part of all the causes of delinquency. I have selected but a few to indicate how serious the problem of the child is. Among all the factors that enter into consideration when the personality and behavior of the child are observed and studied, "parents and home" are the most potent elements which have an influence on and shape the destiny of the future man and woman. The home must be considered the workshop in which the personality of the child is being developed. The character, attitude, and mutual relationship of parents and the child lay the foundation of the mental atmosphere in which the child lives, grows, imitates, undergoes suggestions, forms habits, and prepares himself for future activities to become a member of the community and in his turn to become a parent when he will play his part in developing the personalities of the next generation. The child who is deprived of sympathy and affectionate attention at home misses the most important elements in his preparation for mental and emotional growth. Encouragement to effort and confidence in himself, relief from emotional strain, sympathy that helps a child bear bravely gross and small disappointments, development of affectionate response in cases of unhappy incidents in the life of father, and mother, and of the outside world—all these elements are highly essential in the development of a normal child. Should they be lacking in the home, the child's behavior will suffer irreparably. The lack of joy in home or the want of emotional comfort will lead the child to abnormal tendencies and undesirable habits, such as were mentioned above, and turn the child delinquent with all the unhappy consequences to himself and to the community in which he lives. Statistics show that home is overwhelmingly more influential than the street in producing delinquency. Home environment in all its details presents the best field for preventive work.

1812 *Spruce Street.*

THE INTRAVENOUS ADMINISTRATION OF SODIUM IODIDE IN THE TREATMENT OF GONORRHEAL EPIDIDYMITIS.*

By J. S. CHALMERS, M. D., Ada, Okla.

During the past ten years intravenous medication has been receiving considerable attention and much experimental work has been done with many chemicals along many lines. This work has been largely done in the diseases of bacterial origin, although others of parasitic and mycotic origin have come in for their share. It is not surprising that gonorrhea and its complications have come in for a large part of this investigation, due to the prevalence of the disease, its social and economic importance.

Etiology and Incidence.—The mode of infection may be by direct extension from the urethra through the vas, by the blood stream—due to lowered resistance and trauma,—and through the lymphatics in the sheath of the vas. Traumatism to the urethra and testes is without doubt responsible for many cases, particularly that trauma due to forceful irrigation, instrumentation and strain.

Various estimations place the incidence of epididymitis of gonorrheal origin at from 5 to 20 per cent, with bilateral cases forming about 3 to 7 per cent of the total number of cases.

The work done with sodium iodide in the treatment of gonorrheal epididymitis seems to have had its origin in the observations of Stern and Ritter in 1920. In 1922, Ravich, in a report covering one hundred and sixty cases, noted excellent results from its use. Wright, in 1923, also reports uniformly satisfactory results in a series of cases.

Rodriguez, in the *Journal of the P. I. M. A.*, reports ten cases with uniformly good results; and Chenery, in the *U. S. Naval Bulletin*, also reports satisfactory results from its use. Young, of Baltimore, and Wolbarst, of New York, also report the successful treatment of gonorrheal epididymitis by this method.

In my own practice I have had seven cases which I have treated by this method with uniformly satisfactory results. The preparation used was one of the standard ten c.c. ampules containing fifteen grains of the iodide. This was given intravenously at forty-eight hour intervals from the onset of the disease and continued until there was no longer induration of the epididymis or swelling of the testicle. From four to six injections were found necessary.

In addition to the sodium iodide, all of my cases received oral medication for urinary antisepsis. Hexylresorcinol was given in three cases, and a preparation of kava kava and santal oil, sold by Reidel under the name gonosan, was used in the other four. The latter preparation seemed to have a greater specificity for the gonococcus than did the former, and, as the preparation is much less expensive and does not produce nausea or loss of appetite as does santal oil alone, I am continuing to use it. In addition, the scrotum was suspended in the usual manner. An ice-bag was applied during the first few hours of the disease, and free purgation instituted.

There were no untoward effects noted in any of the cases and the only complaint was that a few moments after receiving the sodium iodide a salty taste was experienced, which persisted for several minutes.

The mode of action of sodium iodide is not exactly known. Kolmer, in answer to the question, "How do iodides produce these results?" says: "I believe that the answer is to be ascribed to the effects of an increase in the proteolytic activity in the pathological tissues, secretions and exudates, as explained by Jobling, Peterson and Eggstein, along, possibly with an actual increase of proteolytic ferments, as suggested by Dick". Kolmer further states that iodides do not act on normal tissues as they do on diseased tissues, apparently due to the fact that tissues devitalized by spirochetic, bacterial or sterile chemical agents, absorb more iodine than normal tissues.

In a further survey of the pharmacology of sodium iodide, I found in Sollman, and in Kolmer, while iodides are absorbed from the stomach after oral administration in from ten to fifteen minutes, that iodin cannot be demonstrated in the blood in more than traces, whereas, after intravenous administration it is found in the serum in concentration of 6 to 9.9 per cent. It is further stated, while 75 per cent is excreted within twenty-four hours, that complete excretion probably does not occur under forty-eight hours or longer, dependent upon the saturation of the individual and the efficiency of the excretory organs.

In amounts less than ten grams given in one hundred c.c. of water, no toxic results are

*Read before thre Clinch Valley Medical Society, at Tazewell, Va, April 26, 1928.

noted in the average adult, and toxic results in amounts greater than this are not due to the action of the iodide but to the introduction into the blood stream of too great a quantity of a hypertonic solution.

Experimental evidence shows that the retained iodides are found in the thyroid, blood, secretory and lymph glands, kidneys, intestine, testes, and bone, the amounts being in the order named.

The course of my cases is as follows:

Case 1. White, male, age 19, mechanic. First seen August 28, 1927, at which time he complained of pain and swelling of the right testicle. Nine days prior to this he had had intercourse with a clandestine prostitute, and five days thereafter first noticed a discharge from the urethra. He had been treating this himself up until the appearance of the epididymitis.

Examination showed a marked enlargement of the right testicle with the epididymis indurated and intensely painful. The temperature at this time was 102 F. He was sent to the hospital and when seen there four hours later complained of pain in the left testicle. The following morning this was also definitely involved. The urethral discharge at this time was profuse. On August 29, he was given ten c.c. of sodium iodide intravenously; the scrotal sac was suspended, and hexylresorcinol, two capsules after each meal and at bed time, was given. Due to the intensity of the pain, morphine was given at this time and repeated some hours later. Within twelve hours the severity of the pain was considerably lessened, and within thirty-six hours the patient was quite comfortable. The temperature had subsided to about normal. The urethral discharge continued to be profuse. Intravenous medication was repeated at forty-eight hour intervals, and on the fifth day the patient was discharged from the hospital. At this time there was absence of pain and temperature, only slight enlargement of the epididymis, and a diminution of the urethral discharge. After returning home, he remained in bed four days, and resumed work the following Monday, having been off for two weeks. In this case five injections were given. After a lapse of four weeks, during which time he was kept on hexylresorcinol, irrigation was resumed with a rapid clearing up of the urethritis. Massage of the prostate and seminal vesicles after the cessation of the discharge was negative for pus or bacteria. On March 1, 1928, on examination of the seminal fluid, motile spermatozoa were found in large numbers, proving the patency of at least one of the ducts.

Case 2. White, male, age 19, student. Contracted gonorrhea September 1, 1927, and treated himself until September 19, 1927, at which time he came in with the complaint of pain and swelling of the left testicle. On examination, the testicle was found to be slightly enlarged and the epididymis indurated and tender. His temperature at this time was 101 F. This patient was given ten c.c. of 10 per cent sodium iodide at once. He was then put to bed, the scrotum was suspended, and an ice-bag applied; he was also given hexylresorcinol, two capsules after meals and at bed time. Pain and temperature subsided within twenty-four hours, and the day following the second intravenous injection the patient walked to the office. At that time there was no pain and only a slight swelling of the lower lobe of the epididymis. He was, however, given two more intravenous treatments. He resumed his duties in seven days and played football within three weeks without further trouble. There was only a slight urethral discharge during the course of the epididymitis, which became more profuse after the epididymitis subsided, but which yielded readily to treatment after irrigations were resumed.

Case 3. White, male, age 25, carpenter. Would not admit having had gonorrhea. Came in complaining of pain and swelling of the right testicle, of two days' duration. There was no urethral discharge, but rectal examination showed the right lobe of the prostate to be enlarged and very tender, and the right seminal vesicle was also enlarged. The patient's temperature at that time was 100 F. This patient was given ten c.c. of the sodium iodide solution at this time and was sent home to bed. He was also given hexylresorcinol, two capsules after meals and at bed time. When seen again two days later, he was free from pain and temperature and had only a slight swelling of the testicle and epididymis. He was given a total of four injections of the sodium iodide, but had returned to work the day following the second injection, making the time lost since beginning of treatment only four days. Ten days after the last intravenous treatment, following massage of the prostate and seminal vesicles, considerable pus was found in the urine, but on a slide stained by

Gram's method no cocci could be found, nor were any demonstrated on other slides made during treatment of the prostatitis.

Case 4. White, male, age 17, student. Contracted gonorrhea early in August, and at that time consulted a physician who gave him some local treatment and later gave him an argyrol solution to use at home. He had been using this for about four weeks and the urethral discharge had practically ceased, when one day, after rather strenuous play, he began to feel pain in the right testicle; this rapidly became swollen and intensely painful. On September 30, two days after the onset of the epididymitis, he came in for treatment. At this time the epididymitis was well defined and the urethral discharge was fairly profuse. He was given ten c.c. of 10 per cent sodium iodide at this time; the scrotum was suspended and he was given kava santal, two capsules after meals and at bed time. Two days later when the second intravenous treatment was given, pain was entirely absent, there was a diminution of the swelling, and the urethral discharge was considerably lessened. The second day following, the patient walked to the office for the third treatment. At this time, aside from a slight swelling at the lower pole of the epididymis, there were no remaining signs. He was given a total of four intravenous treatments and returned to school the following week. There was a slight urethral discharge which cleared up within a short time after irrigations were resumed.

Case 5. White, male, age 40, business man. Contracted gonorrhea and had treated it himself. The discharge had ceased some two weeks before I first saw him. On October 1st he took a long automobile ride over a particularly rough road and on his return home that night had some pain in the left testicle. This became more intense and on October 2nd I was called and saw him at his home. At that time there was a well defined epididymitis with considerable swelling of the testicle and induration of the epididymis. His temperature at this time was 102.5 F. The scrotum was suspended, an ice-bag applied, and codeine given. An hour or two later ten c.c. of sodium iodide was given intravenously. When seen the following day the temperature was still over 100 F. The swelling was practically unchanged but pain was absent. On October 4th, a second injection was given. At this time the temperature was normal and there was a marked decrease in the swelling. The following day the patient was feeling so well that, without my knowledge, he got up and walked about. That night there was a recurrence of the pain; his temperature went up and it was again necessary to give him codeine. This time he remained in bed another four days, during which time he was given three more intravenous treatments. By that time the swelling had subsided and there were no further symptoms. There was no urethral discharge at any time during the course of the epididymitis, nor following it; however, as a precautionary measure, kava santal, one capsule four times a day, was given during the time he was under treatment.

Case 6. White, male, age 45, taxi driver. This man was first seen on March 31, 1928, at which time he complained of pain in the rectum and the occasional discharge of purulent material from the urethra. He gave a history of gonorrhea some years before. On examination, he was found to have a soft boggy prostrate. A three glass urine test showed large quantities of pus in the third glass; smears, however, were negative for the gonococcus. He was given prostatic massage, followed by irrigation. This was repeated at forty-eight hour intervals up until April 2nd, on which date he developed an epididymitis. He was given ten c.c. of sodium iodide at this time, the scrotum was suspended and an ice-bag applied. His temperature was 101 F. Pain was intense and he was given pantopon. It was necessary to give codeine *per os* for the succeeding forty-eight hours, as the pain continued severe until the day following the second injection. Temperature had become normal within thirty-six hours after the first injection and remained so during the remainder of the disease. Swelling increased during the first forty-eight hours, and a slight urethral discharge appeared which became more profuse for forty-eight to seventy-two hours; thereafter, it became progressively less until before he had recovered from the epididymitis it had ceased. The epididymitis did not completely subside until April 13th. He was, however, up and about on April 11th. He was given a total of six intravenous treatments and, in addition, kava santal, two capsules four times a day.

Case 7.—White, male, age 39, business man. Contracted gonorrhea about March 1, 1928. He was treated by a competent urologist and

before April 1st he no longer had any urethral discharge. He continued, however, to irrigate himself for another week. On April 14th, believing himself well, he had intercourse and within twenty-four hours came to me with a well defined epididymitis, the right side being the one involved. His temperature was 99.6 F. There was a moderate swelling of the testicle and marked induration of the epididymis. He complained of extreme pain. He was given ten c.c. of sodium iodide, the scrotum was suspended and an ice-bag applied. Codeine was given for pain. There was no urethral discharge at the onset of the epididymitis, but a slight discharge appeared on the second day, which had ceased by the fourth day. The patient was given a total of four intravenous injections, and the day following the fourth was able to attend to his business. Pain and temperature had subsided within twenty-four hours after the first injection. Kava santal, two capsules four times a day, was given through the course of the epididymitis and continued for a few days after it subsided.

Summary and Conclusions

The administration of sodium iodide has not been attended by any untoward results in any of my cases, nor have any been reported by others.

Relief from pain was noted in most cases within twenty-four hours, with an accompanying lowering of temperature and reduction of swelling. The period for which patients are incapacitated, is generally shorter than those treated by local applications, and, due to the absorption of exudates, there is probably a much lower percentage of sterility resulting from the condition.

Oral medication for urinary antisepsis should accompany the intravenous medication.

References.

P. A. Rodriguez, *Jour. P. I. M. A.*, July, 1926.
A. J. Chenery, *U. S. Naval Bul.*, Oct., 1924.
A. Ravich, *New York Med. Jour.*, 115, 1922.
J. A. Kolmer, Chemotherapy.
A. L. Wolbarst, Gonococcal Infection in the Male
H. H. Young, Practice of Urology.

REPORT OF A CASE OF PSYCHIC APHONIA.*

By T. E. OERTEL, M. D., Augusta, Ga.

According to my best information the first recorded disorder of speech from psychic causes occurred at a place called Babel and seems to have simultaneously afflicted most of the inhabitants. It may, however, be possible that a prior case was made manifest when one Adam said, "The woman that thou gavest me." However, this may be, without doubt such disorders have been more or less frequent ever since man learned the use of his vocal organs for the purpose of conveying to others his mental processes. Doubtless there are many such manifestations of less degree than that which occurred in the case about to be cited. I thought it worth while recording because of the long duration and other peculiarities which render it somewhat unique.

On June 1, 1927, a lady called me over the telephone and said that her sister had not been able to speak for a period of three years, and asked if I thought there might be something done for her. Of course, I replied that I could tell nothing about it without seeing the case. Accordingly, she came to my office the next day, bringing her afflicted sister with her.

I was then given the following history:

Four years ago her sister, Miss C. M., a school teacher, age about thirty-five, had a runaway accident in which she was somewhat injured but only in a minor way. She did, however, suffer a severe nervous shock. Some months afterwards she underwent an abdominal operation for acute appendicitis. There was no apparent untoward result from this for several months when, suddenly, the patient began to show marked mental disturbance, became emaciated, probably because she would not eat, and was taken to the State Institution at Milledgeville, Georgia. On the way to the Institution she quit speaking. After a period of three months she was brought home and her mental condition slowly improved until at the end of two or three months she began to resume her household activities. Her improvement was now rapid, but her speech did not return.

Since then she has been under treatment by several physicians. She spent sometime in a neighboring city where she was kept for observation in a hospital. Here a diagnosis of brain tumor was made and operation advised. I have in my possession X-ray plates of her head which were then made and which showed an area at the vertex which I presume led to the above erroneous diagnosis. Dr. Holmes,

*Read before the Southern Section of the American Laryngological, Rhinological and Otological Society, at Greenville, S. C., January 28, 1928.

our Roentgenologist at the University Hospital, assured me that this hiatus is probably due to a developmental error and that it is not at all uncommon. In his opinion, the X-ray plates showed no evidence of brain tumor.

For the last two years she has been Corresponding Secretary for a state society and is in every way mentally alert and of more than usual intelligence. She now fills a position as clerk to the Ordinary of her county which position she has held for the past two years.

The above information was not all elicited on the first visit as her sister did not wish to speak too plainly in her presence but came to see me the next day to supplement what she had already told me.

I found the patient to be a buxom young woman with red cheeks and intelligent countenance. She carried a pad and pencil and answered all my questions in writing. When asked about her disability of speech she simply wrote that she could not talk or make any sound whatever. I noticed, however, that in laughing a slight sound was produced. Upon examination of the throat and larynx I could find no evidence of abnormality. When she laughed, as she did while under examination, the chords approximated but she did not seem to be able to control the musculature of the larynx by voluntary effort. I concluded that I had a case of psychic aphonia with which to deal, and that mental suggestion and encouragement would probably effect a cure, if I could succeed in gaining her entire confidence. This I set about doing by assuring her there was no physical reason why she could not talk and that in a short time under my guidance and help she would again be able to converse as she did formerly. She seemed rather doubtful of the outcome and so expressed herself in writing. I talked with her for some twenty minutes, explaining that as she had not used her voice for such a long time progress would probably be somewhat slow, and that if this were the case she must not be discouraged.

I told her she must begin to learn to talk over again and that first we would start by saying the alphabet and asked her to repeat after me the letter K. This she was unable to do, making a fantastic face and rolling her tongue around her mouth in the effort. I then instructed her as to how to place the tongue in the roof of the mouth to formulate the first sound of the letter by an explosive expiration and succeeded in getting her to do this, although she made no sound. I then dismissed her with the instruction that she must go by herself where there would be no one to embarrass her and practice saying the letters of the alphabet before a looking glass. This was to be done daily in two periods of twenty minutes each. She was told to report at the end of the week. When she returned at the expiration of this time, she came in smiling and wrote upon her pad, "I can say my alphabet." I asked her to do this for me and she succeeded quite well, although the sounds were made in a low tone and some of the letters imperfectly pronounced. I patted her on the back and assured her that she had made wonderful progress and that she would soon be talking. For her next lesson I gave her one syllable words, such as cat, rat, man, boy, girl, and the like, and told her again to report at the expiration of a week. When she came back she was beaming all over and in hesitating tones said to me, "I have thrown away my pencil." I again congratulated her and assured her that within a few days she would be talking as well as ever. She came again at the end of a week and talked as naturally as one could wish.

Now, of course, this is no very unusual case, nor is it a miraculous cure. It was simply a question of correct diagnosis in the first place, and gaining the confidence of the patient in the second. Why those under whose care she had formerly been should have mistaken the true nature of her malady I do not know, but we are all subject to error. It does seem, however, that such instances of mental aberration with fancied physical derangements should put us on our guard to be constantly on the outlook for similar conditions in which the manifestations are not so marked. In other words, we must treat our patients not only with drugs or the surgeon's knife, but with the true insight as to the tremendous effect that the mind may have over the body, and such healthy advice and guidance as may be suited to their individual needs. Omitting to do this, we have only half performed our duty towards them and have failed in one of the most important functions that a physician has at his command. It is upon such cases that the charlatan or quack, the chiropractor, and others of this ilk, fatten. One can imagine what an enthusiastic letter of recommendation might

have been given by this grateful patient to some so-called religious healer or medical imposter into whose hands she might have fallen and who doubtless could have produced immediate return to normalcy of speech.

I have reported the case not only on account of its intrinsic interest, but also to again call attention to our duty as physicians to be careful not to overlook the immense importance and aid which we have at our command if we can treat not only the physical but the mental condition of those who come to us for help.

Southern Finance Building.

PYELITIS.*

By R. F. THORNHILL, M. D., Pulaski, Va.

Pyelitis is an inflammation of the mucous membrane of the pelvis and calices of the kidney. No other kidney condition will be spoken of except the above.

Etiology.—This is always due to bacteria, with the exception of chemical irritation, the chief way of entry to the kidney being through the blood stream; passage through the lymphatic stream is possible, but rare; while ascension up the ureter is possible, but exceptional. The florae of bacteria are numerous. The acute infections are ususally due to the staphylococcus, streptococcus, typhoid bacillus, gonococcus, pneumococcus, etc. Practially all chronic cases are due to the typhoid and colon bacilli.

The contributory causes are stones, hydronephrosis, pressure on the ureter from without, retention of urine, local infections of other parts of the body, cystitis, and general infections, etc.

Symptoms.—There are a great variety of symptoms, as fever, no type of fever, however, being characteristic of pyelitis; it may be continuous, remittent or intermittent, nor does the degree of temperature depend upon the severity of the case. Pain is very peculiar in its characteristics, is rarely found referable to the kidney, although some complain of dragging pain in the back, while others will complain of lumbar region pain and occasional renal colic pain.

Urination is one of the outstanding symptoms in regard to frequency of micturition at night, due to large quantity of pyuria and irritability. Other symptoms, which may or may not be, are nausea, vomiting, muscular rigidity, chills, etc.

Diagnosis.—Careful examination of urine from ureter is necessary. In acute cases, urine findings are alubumin, red blood cells, pus cells, bacteria. In chronic cases, practically the same findings are made as in acute cases, except red blood cells may be absent. It is a matter of considerable importance and interest to know that pyuria of kidney origin is almost always associated with a large amount of serum albumin; on the other hand, many pyurias are of vesical origin, and show no serum albumin, although there are exceptions in both cases.

Cystoscopic examination may disclose any degree of cystitis, which is often present. Lesions vary around the ureteral orifice of the affected side; you may see a reddened, sprouting opening, or a retracted opening, or there may be much difficulty in finding the ureteral opening. If pyuria is intense, turbid urine can be seen on the affected side, and clear on the other. If indigo-carmin has been used, a marked difference is shown. The function of the kidney and urine content and character are determined by catheterization of the ureter alone.

Many cases of chronic pyelitis are associated with strictures of the ureter. However, every case where obstruction is met in introducing the catheter must not be regarded as stricture, but should be examined thoroughly by functional tests and X-ray to determine to what the obstruction is due.

When a diagnosis of pyelitis is made, a very careful examination should always be made to determine if there is any focal infection, especially in gonococcus cases. Blood pictures in pyelitis are of no definite value in making a diagnosis.

Prognosis.—This depends upon the extent and stage of the disease. Acute cases usually subside and heal rapidly under appropriate treatment. On the other hand, chronic, long standing cases, are most difficult and often impossible to clear up.

Treatment.—In acute cases, rest in bed, mixed liquid and soft diet, water freely by mouth, mild laxatives chiefly of saline nature, and some urinary antiseptic by mouth, which depends chiefly upon urine reaction, particularly the formalin liberators where possible to be taken. If there is nausea and vomiting,

*Read at the meeting of the Southwestern Virginia Medical Society, in Marion, March 29-30, 1928.

saline solution or glucose in saline solution may be used intravenously; if continued high temperature, mercurochrome, 1 per cent aqueous solution intravenously, may do good. Any primary focus of infection must be found and removed if possible. If no results are obtained and no local condition is found in the kidney to account for a bacterial attack, it should be determined by kidney lavage, which is most important in certain types of cases. Kidney lavage or washing out the renal pelvis through the ureteral catheter with sterile water, 2 or 3 per cent boracic acid, or some similar solution may be tried. Lavage should be followed by silver nitrate or mercurochrome, 1 or 2 per cent solution of either. If there is a pronounced inflammatory or pus condition coming from the kidney, the catheter should be left in ureter and irrigated every 12 to 24 hours until it clears up.

Correspondence

Diphtheria Toxin-Antitoxin and Antitoxin.

The following is a letter which has recently been issued by the State Board of Health. We are giving it this additional publicity on account of the great importance and value of toxin-antitoxin as a preventive of, and antitoxin as a means of combating diphtheria.

November 14, 1928.

To Virginia Physicians:

As so many doctors have asked advice regarding the protection of children who have been exposed to diphtheria, particularly as to the use of toxin-antitoxin or antitoxin, we are sending this general letter. A rule cannot be made to suit all cases and conditions. We will state certain facts and leave their adaptation to the judgment of the doctor to suit his cases.

Diphtheria antitoxin (1,000 units for prophylaxis) gives passive immunity which begins promptly at its maximum and then gradually wears off and disappears in a few months.

Toxin-antitoxin gives active immunity, which is slight at first and gradually increases until it reaches the maximum in three or four months and lasts practically a life time.

Antitoxin has a large amount of animal serum which produces sensitization to similar serum. This sensitization is likely to bring about anaphylactic reaction should it be necessary to give antitoxin for diphtheria or tetanus at a later date.

Toxin-antitoxin has such a small amount of animal serum that there practically is no sensitization and no danger of subsequent anaphylactic reaction.

The danger of children exposed to diphtheria in the same family contracting the disease is hardly 10 per cent. In a school room the danger is even slighter. If a child is exposed and can be watched for the first sign of sore throat, it might be advisable not to give him antitoxin for prophylaxis. If, however, he has been intimately exposed and lives a distance in the country where the prompt services of a doctor will be difficult to secure, it might be better to give antitoxin. Here is where the judgment of the doctor must be used.

Toxin-antitoxin should be given whenever the opportunity is afforded. There is no occasion to wait until spring to give it. It gives a certain amount of immediate immunity and many recommend giving toxin-antitoxin instead of prophylactic antitoxin even during an epidemic. The sooner given the sooner the protection develops. The giving of toxin-antitoxin does not contra-indicate the use of antitoxin should the child develop diphtheria before the toxin-antitoxin confers immunity.

Ennion G. Williams,
State Health Commissioner.

Roentgenology

Roentgen-Ray Diagnosis

LEOPOLD JACHES, M. D., Radiologist, Mt. Sinai Hospital, New York City.

(*Continued from page* 552)

Tumors.—Tumors of the lung which are either primary or metastatic, endobronchial or parenchymatous (lobar) can be readily localized by the roentgen ray, but cannot always so readily be diagnosed as such by the roentgenogram alone. The history, a primary lesion elsewhere, and the age of the patient may be necessary for the diagnosis.

Primary tumors are always the carcinomas. The endobronchial, if small and causing no stenosis with consequent atelectasis, may not be demonstrated as early as the patient's symptoms manifest themselves. Often when there is a marked infiltration in the adjacent area the differentiation from a nonmalignant condition, such as pneumonia, cannot be made, and the

bronchoscope must be resorted to. Generally, however, there are metastases in the other lung or in the ribs, so that recognition of the lesion is not difficult.

Parenchymatous tumors may resemble lobar pneumonia.

Metastatic tumors, whether carcinomas or sarcomas, have an irregular distribution. Carcinomatous metastasis in particular often appears miliary in character, so that the differentiation from tuberculosis may be extremely difficult. The presence elsewhere of a primary lesion, whether operated on or not, and the fact that these infiltrations have a distinct circular outline which miliary tuberculosis has not, will help in their recognition. Another distinguishing feature is the frequent noninvolvement of the apexes.

The Pleura.—The normal pleura is not demonstrable by the roentgen ray, nor is dry pleurisy. When the pleura has become thickened, it casts a shadow whose density is in proportion to the thickening. Sometimes there is difficulty in differentiating it from effusions or pulmonary infiltrations.

Pleural effusions, whether serous or purulent, present equally dense shadows. The early fibrinoplastic exudate may be seen as a line running parallel to the periphery of the lung from apex to base. Larger free effusions, but without the presence of air or gas, will be seen as a density with a concave upper limit occupying the lower portion of the chest. Encapsulated effusions are generally present near the axillary border of the chest in the upper or the lower portions, or in both. They may be multilocular, but their shadows may fuse, so as to appear as one. Often the lower collection is smaller than the upper, and the surgeon is surprised at the small quantity of pus he obtains until he makes another incision higher up and drains both cavities. Interlobar effusions are readily recognized on the right side by the straight line running from axilla toward the hilum at the level of the sternal end of the fourth rib. On the left side the obliquity of the shadow generally prevents its demonstration.

Pneumothorax is brilliantly shown by the uniform transparency and by the absence of any lung markings in the side of the chest involved. The collapsed lung stands out very sharply against the air or gas, its density depending on the degree of collapse. Heart, aorta and mediastinum are generally displaced to the opposite side. When both fluid and air are present, there is a fluid level which shifts with the change of position of the patient.

Tumors of the pleura cause dense shadows, which are due to the thickening of the pleura itself or to the additional presence of fluid. The differential diagnosis can be made only from the history or the presence of metastases in the opposite lung or in the ribs.

Tuberculosis of the pleura, aside from presenting adhesions, thickening or an effusion, may in rare instances show irregular calcifications which can be localized on the pleura by stereoscopic examination.

The Diaphragm.—In the study of the diaphragm, the fluoroscope is more important than the film. Normally the diaphragm appears as a domelike shadow on both sides of the spine. The right side is generally higher than the left and merges with the shadow of the liver; the left, being situated over the stomach and splenic flexure, both of which contain air or gas, is seen as a narrow curved dense band. Depending on the stature of the patient, the position of the diaphragm varies. In tall, thin persons it is low, in the stout it is high.

Adhesions will cause irregularities in the convexity on either side. On the right side, however, there are often seen, on deep inspiration, small humps which are normal and should not be mistaken for adhesions.

Pulmonary tuberculosis or pneumonia often causes restriction in the movements of the diaphragm on the affected side, even if the lesion is at a distance above it.

Subphrenic abscess or other effusion results in an elevation of the diaphragm on the affected side. On the left side, where the effusion may be interposed between diaphragm and stomach, there is sometimes seen a broad dense shadow between the two with the gastric bubble below it.

Eventration, which is more frequent on the left side, will show the diaphragm as a narrow dense curved band high in the chest, with distended stomach and intestines below it. The heart and the mediastinum are displaced to the right.

The differentiation of this condition from diaphragmatic hernia is often very difficult. An opaque meal will sometimes place part or

all of the stomach above the diaphragm in case of hernia, especially when the patient is examined in the recumbent or Trendelenburg position. Pneumoperitoneum, on the other hand, by showing the gas above the stomach and below the diaphragm, will help determine the presence of an eventration.

(To be continued)

Woman's Auxiliary, Medical Society of Virginia

News From the State Auxiliary.

There is very little to report concerning the Auxiliary this month. Owing in both cases to illness, the two delegates appointed to the Southern Medical Association meeting at Asheville were unable to attend. It would be of great assistance to the president in naming delegates if the members who plan to attend the various meetings would notify her of their intentions, so delegates and alternates could be selected well ahead of time. It is impossible to write all the members asking if they intend to go to meetings, but it will be a very simple matter for individuals to write to the President, Mrs. F. W. Upshur, 818 West Franklin Street, Richmond, Virginia, and say that they are attending a certain meeting. At present the names of those who are planning to go to the American Medical Meeting, in Portland, Ore., would be a great help. Please remember to pay your dues promptly, as otherwise Virginia will not get the credit for all her members and the number of our delegates will be reduced.

The Richmond branch, of which Mrs. Stuart Michaux is president, gave a tea dance to the freshman class of the Medical College of Virginia. It is planned to make this an annual event, so as to give the newcomers a chance to meet some Richmond people and make some social contacts outside the college. The tea was largely attended and was a great success.

Mrs. Fletcher Wright, of Petersburg, Chairman of Organization, has written to those ladies who gave their names at the Danville meeting and expressed a desire to organize. Any others who are interested will please send their names and addresses to Mrs. Wright and she will tell them how to go to work, and if possible go in person to help them get started.

The American Medical Association has collected a number of health films which are available for those auxiliaries that wish to put on a health programme in the counties. Information concerning these films may be had by writing Mrs. J. Allison Hodges, Cary Street Road, Richmond, Virginia.

Proceedings of Societies

The University of Virginia Medical Society.

This Society met on Monday, November 4th, at the Hospital. Dr. Bray presided.

Dr. Dudley Smith exhibited a case of Xeroderma Pigmentosa, and described the lesions with cancer formation in the skin and the treatment with radiation. In the discussion, Dr. Bray described the microscopic sections from a great fungating cancer of the nose on this patient which is now receding under radiation.

Dr. Richard Meade described a case of actinomycosis now under observation with a prolonged history beginning apparently with a cryptogenic infection in the jaw and presenting obscure empyema and abscesses in the loose tissue and only at a later date giving the characteristic sulphur granules.

Dr. Brumfield exhibited recent autopsy material from a case of fibrous myocarditis with brown atrophy and sudden death. The rather incomplete evidence as to the cause of sudden death in this case was reviewed and microsections were projected.

Dr. Graham exhibited recent autopsy tissues from an unusual case of cancer of the rectum with protracted, almost complete obstruction. The cancer exhibited a sharply localized annular ring with no evidence of extension to adjacent regions, lymph nodes, or liver. There was an enormous hypertrophy of the large intestine above the structure resembling that of megacolon, and below the structure the lower six or eight inches of rectum was greatly distended but atrophic. A micro-projection showing the adecarcinoma was shown. Dr. Meade discussed the case, describing the gigantic distention of the colon at emergency operation for obstruction. Dr. Marshall discussed the diagnosis and the features that suggested the picture of non-specific ulceration of the rectum.

The main paper of the evening was a presentation by Dr. Lehman of experimental work upon fat embolism (paper to be published elsewhere).

The next meeting will be held at the University Hospital, November 19th.

The Truth About Medicine

In addition to the articles enumerated in our letter of September 28th, the following have been accepted:

Abbott Laboratories
  Capsules Ephedrine Hydrochloride—Abbott, ⅜ grain.
Lederle Antitoxin Laboratories
  Tablets Whole Ovary—Lederle, 2½ grains.
Eli Lilly & Co.
  Antimeningococcic Serum Concentrated—Lilly.
  Antistreptococcic Serum, Purified and Concentrated (Lilly).
Mallinckrodt Chemical Works
  Iso-Iodeikon.
Merck & Co., Inc.
  Optochin Base.
  Optochin Hydrochloride.
H. K. Mulford Co.
  Mulford's Acidophilus Bacillus Blocks.
  Tetanus Antitoxin (Bovine).
Parke, Davis & Co.
  Capsules Ephedrine Sulphate—P. D. & Co., ⅜ grain.
  Capsules Ovarian Substance, Desiccated—P. D. & Co., 5 grains.
E. R. Squibb & Sons
  Tablets Protargentum—Squibb, 4.6 grains.
  Tablets—Solargentum—Squibb, 4.6 grains.
Swan-Myers Co.
  Syrup Ephedrine Hydrochloride (Double Strength) —Swan-Myers.
Nonproprietary Articles
  Ethylhydrocupreine.
  Phentetiothalein Sodium.

NEW AND NON-OFFICIAL REMEDIES.

Diphtheria Toxin-Antitoxin Mixture.—The antitoxin used in the toxin-antitoxin mixture (New and Non-official Remedies, 1928, p. 366), is produced from the horse, goat or sheep.

Diphtheria Toxin-Antitoxin Mixture (New Formula) (Sheep)—Squibb.—Each cubic centimeter represents 0.1 L+ dose of diphtheria toxin neutralized with the required amount of antitoxin obtained from the sheep. Marketed in packages of three ampules, each ampule containing 1 c.c. of the mixture; in vials containing, respectively, 10, 20 and 30 c.c., and in packages of thirty 1 c.c. ampules. E. R. Squibb & Sons, New York.

Parathyroid Hormone—Squibb.—A stable aqueous solution containing the active principle or principles of the bovine parathyroid glands and having the property of relieving the symptoms of parathyroid tetany and of increasing the calcium content of the blood serum. It is standardized physiologically. Parathyroid Hormone-Squibb is claimed to be specific for normal or parathyroidectomized man when injected subcutaneously for increasing the level of the blood serum calcium. It is marketed in 5 c.c. vials. E. R. Squibb & Sons, New York.

Tetanus Antitoxin.—This tetanus antitoxin, concentrated (New and Non-official Remedies, 1928, p. 356), is also marketed in a syringe containing 20,000 units. Eli Lilly & Co., Indianapolis. (Jour. A. M. A., October 13, 1928, p. 1109).

Diphtheria Toxin for the Schick Test.—This diphtheria immunity test (New and Non-official Remedies, 1928, p. 291), is also marketed in packages of two 10 c.c. vials, sufficient for 100 test doses. Schick Test Control is also supplied in packages of one 10 c.c. vial, sufficient for at least 100 tests. H. K. Mulford Co., Philadelphia.

Tetanus Antitoxin Globulin.—This tetanus antitoxin, concentrated (New and Non-official Remedies, 1928, p. 356), is also marketed in piston syringe containers, containing 20,000 units. Parke, Davis & Co., Detroit.

Diphtheria Toxin-Antitoxin Mixture 0.1 L+ (Non-Sensitizing).—Each c.c. constitutes a single dose of diphtheria toxin neutralized with the proper amount of antitoxin produced from goats (New and Non-official Remedies, 1928, p. 366, and *The Journal*, October 13, 1928, p. 1109). It is marketed in packages of three vials, each containing 1 c c.; in packages of one vial containing 10 c.c., and in packages of one vial containing 30 c.c. United States Standard Products Co., Woodward, Wis. (Jour. A. M. A., October 20, 1928, p. 1193).

PROPAGANDA FOR REFORM

Barbital and Related Hypnotics.—Many substitutes for barbital have been introduced with the claim of greater relative hypnotic action as compared with toxic effects. The toxic action appears to be mainly an intensification of the depression of the central nervous system which in therapeutic doses produces nearly normal sleep; hence their hypnotic activity and their toxicity must run closely parallel, so far as the central nervous system is concerned. An experimental study of a number of hypnotics of the barbital series on cats showed that none were much more actively hypnotic in proportion to their toxicity than barbital. Of the five hypnotics examined, none exerted marked analgesic effects with less than 30 per cent of the average fatal dose. None of the hypnotics produced any uniform change in the heart rate or respiratory rate. From this study one does not gain the impression that any of the substitutes possesses all the advantages and none of the disadvantages of the official barbital. Probably the actual toxicity for man is nearly proportional to the hypnotic action. (Jour. A. M. A., August 11, 1928, p. 398).

"Denicotinized" Tobacco.—So-called denicotinized tobaccos and tobacco products for which reduced nicotine content is claimed or implied by label declaration are now being offered for sale. Some of these are claimed to be "absolutely harmless." The Connecticut Agricultural Experiment Station has published a report on denicotinized tobaccos which shows that the nicotine content of these products varies considerably just as in the case of ordinary tobaccos. As a group, they were found to contain somewhat less nicotine than tobacco. Some "denicotinized" products on sale contained as much nicotine as is likely to be found in ordinary tobaccos; a few contained substantially less. None of the "denicotinized" tobaccos examined are sufficiently poor in nicotine to warrant unrestricted indulgence on the part of consumers who suffer ill effects from this alkaloid. It is pointed out that the consumer of "denicotinized" tobacco products may consume larger quantities than of the ordinary product, partly because he believes it to be largely or entirely freed from its objectionable nicotine, and partly in an unconscious effort to secure the satisfying effects he is accustomed to derive. Consequently his actual nicotine intake may equal or exceed his usual con-

sumption. (Jour. A. M. A., August 18, 1928, p. 501; August 25, 1928, p. 583).

The Action of Glycerophosphates.—The general consensus of critical opinion is that the theory under which the glycerophosphates were introduced into medicine is fallacious and that they are useless as tonics. Whatever effects are observed from the mixtures in which these salts are generally buried, may be safely abscribed to the other ingredients. (Jour. A. M. B. A., August 18, 1928, p. 515).

Treatment of Tapeworm in a Child.—To children, oleoresin of aspidum may be prescribed in doses of 0.5 Gm. per year of age but not exceeding a maximum dose of 5 Gm. The preparation should include saline catharsis for several days previously, light diet for the day before, and a liberal dose of magnesium sulphate (from 5 to 10 Gm.) and an evacuent enema the evening before the treatment. (Jour. A. M. A., August 25, 1928, p. 584).

Tuberculin.—Investigation at the Otho S. A. Sprague Memorial Institute at the University of Chicago makes it evident that the water-soluble protein in tuberculin is similar in many of its properties to ovalbumin. These studies have resulted in the isolation of the active principle of tuberculin in crystalline form. (Jour. A. M. A., September 1, 1928, p. 648).

Caffein in Beverages.—The report of the U. S. Department of Agriculture indicates that, despite continued growth in population, nearly six and one-half million pounds less tea was imported during the fiscal year ending June 30, 1928, than during the previous year. This represents a decrease of 7 per cent. In contrast with this is the governmental announcement that caffein-containing drinks other than tea and coffee are now being used extensively with meals at lunch counters, cafeterias and similar eating places. Those who have hopefully anticipated a decrease in the "caffeinization" of the nation will be further disconcerted by the information that of several million pounds of tea waste, tea siftings and tea sweepings which have been imported "for manufacturing purposes" practically all are reported to be converted into caffein, a large portion of which is used in the preparation of caffeinated soft drinks. (Jour. A. M. A., September 1, 1928, p. 649).

Arsamine.—According to the advertising for "Arsamine" of S. Lewis Summers, this preparation is "diarylarsonate", but no definite statement of composition is made. It is believed that a constantly increasing number of physicians are refraining from the use of proprietary medicinal articles which have not been reported on favorably by the Council on Pharmacy and Chemistry. This is in accordance with the report of the Board of Trustees of the American Medical Association to the House of Delegates in 1927 urging support of the work of the Council by confirming the use of proprietary drugs to those found acceptable for inclusion in New and Nonofficial Remedies. The claims that have been made by Dr. S. Lewis Summers for Befsal which were the subject of a report "Befsal Another Alleged Synthetic" (Jour. A. M. A., February 21, 1925, p. 611) constitute ample justification for questioning the claims made for Arsamine. (Jour. A. M. A., September 1, 1928, p. 664).

The Investigation of Germicides.—J. S. Simmons has studied the bactericidal action of mercurochrome —220 soluble and iodine solutions in skin disinfection and F. E. Rodriguez has studied the action of mercurochrome and iodine as disinfectants of the mucous membrane of the mouth. After taking swabs of the treated areas, they streaked the material directly, without previous dilution, on the surface of an agar plate. This procedure, it is agreed will give inhibitory effects and may be an unfair test, because no two drugs have exactly the same inhibitory index. It has been found that iodine has a higher inhibitory effect than mercurochrome and it seems likely that the amount of iodine carried over to the plates might have been sufficient to inhibit growth of the bacteria without being bactericidal. G. F. Reddish and W. E. Drake studied the action of mercurochrome—220 soluble and U. S. P. tincture of iodine as to comparative germicidal efficiency. These investigators used scrapings from the skin surface in a way to considerably dilute any antiseptic that may be present. They made controls to prove that no drug inhibition took place in their tests. In other respects the work of Simmons and Rodriguez introduced errors which Reddish and Drake tried to avoid. However, whatever the final results of laboratory experiments may be, reliance should not be placed solely on such results; clinical observations must be considered. (Jour. A. M. A., September 8, 1928, p. 728).

The Prevention and Modification of Measles.—Two years ago it was announced that protection was secured in 85 per cent or more of susceptible persons exposed when convalescent measles serum was administered before the fifth day after exposure to measles and that in some cases the disease was modified when the serum was given as late as the seventh day. It has been attempted to produce a serum from animals by using the diplococcus isolated from patients with measles. Results have been reported from the use of such a serum developed in horses; but the production of immune goat serum seems even more promising. It is to be remembered, however, that the protection thus conferred is only transient. Active immunization with a toxin prepared from the causative organism of measles remains to be successfully accomplished. In Chicago a committee has concluded that as a general practice it is doubtful whether the immunization of all children exposed to measles is desirable. (Jour. A. M. A., September 15, 1928, p. 803).

Book Announcements

The Medical Record Visiting List, or Physicians' Diary for 1929. Revised. New York. William Wood & Company. Medical Publishers. 30-patient daily record, with various tables and much information of value to the physician in his every-day work. Pocket size. Leather, with inside pocket and pencil. Price, $2.00. Orders should be sent direct to publishers.

National Health Council Film List, Including Information on Visual Aids and Their Producers and Distributors. Fifth Edition. 1928. Prepared and printed by Welfare Division, Metropolitan Life Insurance Company. Home Office, New York. 178 pages. Paper.

Committee on Public Health Relations. Report of Activities for the Year 1927. The New York Academy of Medicine, Fifth Avenue and 103rd Street, New York City. Pamphlet of 31 pages.

Pamphlets of the Policyholders Service Bureau, Metropolitan Life Insurance Company, Home Office, New York. **The Use of Style and Design in Industry,** 44 pages. **Business Organization No. 12—Functions of the Production Executive,** 26 pages and table.

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Editorial

Malaria and Sir Ronald Ross.

The place that malaria, as a disease, has occupied in the history of the progress of civilization and the physical fitness of the human race has been a large one. War and pestilence have probably held as important positions as deterrents in the progress of human life and health, but, as a slow persistent and ever-recurring deterrent of health and happiness, especially in the zones of the world where marsh land and temperate climate have favored the propagation of the mosquito, malaria has stood out as a blighting scourge in all generations of man.

Through Europe, including England, Asia Minor, Burma, the Straits Settlements, Java, China, Formosa, Egypt; west, south and central Africa, Australia, South America, West Indies; and the United States, malaria has for unrecorded generations wrought its deadly effects on the inhabitants. With seasonal periodicity, the paludal disseminator of malaria, has risen through the years to inoculate and cripple the bodies of men, women and children. No one knows for how long the miserable sway of this disease has had dominion over the happiness and welfare of the human race of these countries. No one with the greatest stretch of the imagination could fully picture the unutterable miseries suffered by peoples of Southern climates the world over, in both its acute paroxysmal symptomatology and its chronic recurrent pathological changes that combine to visit upon every tissue and organ of the body malignant processes of all sorts and types. While the mortality of the immediate attack of malaria served as a rather small indictment of the disease, the fatalities of the disease have been enormous from the chronic pathology that its persistent recurrence in the body of man has occasioned.

So probably no disease has a truer claim to consideration as an historic menace to man in all his works through life than malaria.

In our Southern states we know malaria has been a large menacing economic and health problem for generations. No man can sum up the addition of its baneful effect upon commercial, social, and physical welfare of our Southern people. For malaria, in its acute symptomatology and in its chronic forms, throughout the three hundred years of American history, has been a hindrance to the success and a danger to the health of our people. Even within recent decades, since the discovery of the true nature of the malady, its etiologic cause and environmental propagation and its specific means of transplantation from man to man, malaria has persisted its menacing influence on the welfare of the people of our section of the country. While states south of us have, no doubt, suffered more seriously from the malignant action of this disease, Virginia, in regions contiguous to its broad water-courses and bay-country, has been a victim of the untoward effect of its periodic seasonal recrudescence. Throughout her colonial history, from the settlement at Jamestown to the Revolution, this disease played a grievous part in retarding the happiness and the health of Southern people. Throughout the Civil War, in both armies about bivouacs in the low country-side of Virginia, malaria, laid low with chills and fever many a soldier, and left many a veteran handicapped for life.

So it has come in post-war times, not so much as before, a problem of preventive medicine, an important health problem. Even today, if measures are not taken for its prevention, malaria may figure in no inconsiderable degree in the pathology of the people, if not in this State, in the more Southern states, particularly in that region about the Mississippi delta country.

History of Discovery of Causation of Malaria

From the time of Hippocrates, the cause of malaria (ague, fever and ague, chills and fever, marsh fever, swamp fever, paludal fever, miasmatic fever, remittent fever, pernicious fever,

bilious fever) has been sought for. Various more or less fanciful theories have been given by various ages of medical practitioners and students of malaria. But it remained for workers in the closing years of the nineteenth century to make the necessary discoveries. The true nature of this age-long human malady was discovered by a series of advances in research investigation of its microscopic parasite in the blood of the human and the means of the germ transplantation from man to man by the bites of certain species of mosquito. The steps of discovery by which this great advance in human knowledge occurred have become a big chapter in the history of modern medical achievement and scientific progress. The first notable contribution was made by Laveran, a French army surgeon, in 1880. In November of that year, Laveran plainly saw living parasites, by aid of the microscope, in a specimen of blood of a malarial patient, and he afterward communicated this astonishing discovery to the Academy of Medicine in Paris. Like many other discoveries, much doubt greeted his announcement. But in 1885 Italian pathologists, having accepted Laveran's statement, began to work over the next important advance: the life history of the malarial parasite. Italy, for centuries having been devastated by malaria, eagerly gave valuable research contributions to the knowledge of malaria. Italian pathologists in due time established the nature of the parasite; its behavior in the blood; its periodical febrile paroxysm resulting from developmental changes in the parasite; the identification of the relationship of the different forms of malarial fever to the aestivo-autumnal group.

But the origin of this parasite; and its ways; and its mode of introduction into the blood were yet unknown. For a time suggestions of the possible relation of the marsh mosquito with the parasite and its introduction by this insect into the human body were made. In 1894, Sir Patrick Manson, more emphatic than others, impressed the suggestion that the mosquito formed the intermediate host, but this important step as a means of propagation of malaria was not proved until the following year.

Major Ronald Ross

In 1895, Ronald Ross made the big discovery that showed malaria in its true colors. Ross found that if a mosquito sucked blood containing malarial parasites, flagellae were soon formed and that these broke away and became free. In 1897 he discovered peculiar pigmented cells, which were parasites of aestivo-autumnal malaria in the early stage of development in the stomach of the mosquito. Ross further proved that only mosquitoes of the genus anopheles had these cells. He showed that the mosquitoes did not have them when feeding on healthy blood, but did when fed on malarial patients' blood. Ross then worked out the life history of the parasite within the body of the mosquito.

As a benefactor of the human race this man has received meager reward. It is true that his country no longer calls him major, but Sir Ronald Ross—but he is now 71 and in declining health. He is now brought face to face with the necessity to sell for $10,000 the archives that tell of this epochal work at his hands. Sir Ronald Ross in his old age, appears to be in failing health and in want of physical comforts, while the fact of his scientific study has enabled untold thousands of his fellow beings to be protected from the ravages of a devastating malady. Consciousness of a heroic position in the ranks of the world's benefactors is indeed compensation, but is it not a queer turn of destiny that want and poverty should threaten the body of one who has done so much for the bodily comfort of his fellow men?

The London letter, found in the J. A. M. A., November 17, 1928, page 1560, tells the lamentable story of Sir Ronald Ross' present plight.

In an interview, the following intimate picture of the details of his discovery are given by himself. In 1897 he was in the Indian Service. For years he had been trying to cultivate malarial parasites in patients. August 20th, he was on military duty and had been working all morning in his regimental hospital in the hottest weather. He went home, tired and exhausted from the heat. He laid down and fell asleep. When he awoke, the key to the problem seemed to come to him. He followed up the thought and proved that the anopheles mosquito carried malarial germs in its stomach. For a year he worked and brought forward the new facts. He says: "For fifty years I have been talking to politicians and others with the idea of getting them to take some interest

in the preservation of human life. They seem to have forgotten that malaria kills more people than any other disease, and that for every million it kills it renders two hundred million sick every year. It causes one-third of the sickness in India."

An Appeal for Medical Folklore.

Members of the Medical Society of Virginia, who may have knowledge of beliefs of diseases and folklore remedies of the past, will materially assist the Committee on History of Medicine in Virginia of our State Society, if they will reduce to writing any of these and send same to Dr. Wyndham B. Blanton, Richmond, Chairman. Since the special circular sent with the November number of THE VIRGINIA MEDICAL MONTHLY, some responses to the request have been received, but it is certain that much remains to be unearthed and to be put into writing. It is hoped that members will take interest in the collection of this material in old Virginia, which has long since been permitted to remain a matter of word of mouth.

Folk medicine is a chapter of medical history rich in interest, if not in scientific value, and it should be preserved in writing if possible.

In old days on the Virginia plantations, and in rural communities, in remote sections of the State, among the slaves and negro "grannies," there developed a sort of medical practice that passed by word of mouth from one to another through the years. These "old sayings" and trifling medical folklore merit collection and recording before time and lack of a need for such in modern life cause them to be lost. Physicians have heard many of these "beliefs" and "practices" and it is only necessary to take the time to reduce the same to writing and to forward them to the committee on history.

Remember Your Advertisers.

It is well, once in a while, to take note of our assets. Every member of the Medical Society of Virginia is part owner of the MONTHLY and should be interested in its success. One of our greatest assets is the high class advertising in our pages, for the journal is in large measure supported by its advertisers. Many advertisers have something for our readers—just for the asking. They key advertisements so as to trace results and are encouraged to renew contracts when readers manifest an interest. You may secure much that is worth while and our advertisers will be pleased if you will look over the advertising pages each month and write for samples and literature which will be sent on request. Don't fail to say that you saw the advertisement in THE VIRGINIA MEDICAL MONTHLY.

News Notes

We extend to our readers the Season's Greetings and Best Wishes for Christmas and the New Year

Prize Winners in Danville Golf Tournament.

In publishing our notice of the Danville meeting of the State Society, we had not been advised of names of winners in the golf tournament. This accounted for our failure to mention this event, which was of great interest to many of our members.

Dr. Robert C. Bryan, Richmond, with the lowest score—92—won the cup donated by the local society. Other prizes, donated by the Danville merchants, were awarded as follows: Dr. John Bell Williams, Richmond, pen; Dr. John S. Horsley, Jr., Richmond, golf club; Dr. Richard W. Fowlkes, Richmond, golf hose; Dr. Paul W. Howle, Richmond, golf balls; Dr. W. L. Harris, Norfolk, cigars; Dr. Stuart Michaux, Richmond, golf bag; Dr. W. B. McIlwaine, Petersburg, hypodermic case; and Dr. J. Blair Fitts, Richmond, searchlight.

The Story of the Chrismas Seal.

Every year millions of Christmas seals are sold in this country to control and prevent tuberculosis. They have become a symbol of the great war that is being waged against an ancient, preventable disease. But in 1904 the Christmas seal originated in a small way to give a chance for health to a group of tuberculous children in a foreign country.

In that year a children's hospital was needed in Copenhagen, Denmark. A postal clerk in that city named Einar Holboell heard of this and conceived the idea that stamps, especially designed to decorate Christmas letters and packages, could be made to finance the cost of the building. His enthusiasm won for him the endorsement of the Danish royal family, and the first Christmas seal was designed and placed on sale in the post offices. The good citizens of Denmark purchased enough of them to insure for the sick children the best medical and nursing care available.

A pioneer in the field of social service in America received a letter from his mother country bearing one of the bright-colored little

stamps. His name was Jacob Riis and, his curiosity aroused by this new decoration, he inquired about its purpose. The possibilities of its use in the United States impressed him. He wrote an article that was published in the "*Outlook*" in which he described what the stamp had achieved in Denmark.

In that article, Miss Emily P. Bissell, of Wilmington, Delaware, found the solution of her own problem; namely, how to raise $3,000 for a tuberculosis pavilion in her state. She organized the first sale of Christmas seals in the United States and as a result the pavilion was built. In 1908, Miss Bissell was able to induce the authorities of the American Red Cross to undertake a nation-wide sale of tuberculosis Christmas stamps. Women's clubs, religious bodies and local Red Cross chapters assisted in the campaign. From then on until 1920 the Red Cross conducted the sale of the seals.

From 1907 to 1910 the National Tuberculosis Association had been organizing its warfare against the disease with the support of foremost scientists, but with little funds. To strengthen the organization's work, the American Red Cross joined with it in the Christmas seal sale. The partnership between these two great welfare bodies lasted for ten years. Then, in 1920, it was dissolved because the American Red Cross desired to continue its annual Roll Call, begun in the years of the Great War, and it did not wish to appeal to the public for funds twice a year. Since that time only the double-barred cross, emblem of the tuberculosis movement, has appeared on Christmas seals.

Through the power of the Christmas seal, state after state was gradually organized to attack tuberculosis with a scientific program. The state organizations entered the larger cities and counties and formed local associations. Together, led by the National body, they have brought into existence nearly all of the present-day community machinery for combating tuberculosis.

The little stamps help to control the sources of infection especially to children, to educate everyone in health habits and to prevent economic loss due to the death of producers. This year the National Tuberculosis Association and its affiliated organizations will hold the twenty-first sale of Christmas seals throughout the country.

The above story was supplied by the National Tuberculosis Association.

Ephedra Picking—China Famine Relief Work.

Chinese in the famine regions pick a medicinal herb by the roadsides in return for food. The herb, called ephedra (*ma huang*, in Chinese), has of recent years been employed considerably by foreign druggists for making *ephedrin*, a drug indicated for asthma and bronchial complaints. In co-operation with the Peking Union Medical College, the Mosse Memorial Hospital, the North China Diocesan Relief Fund, and other institutions, the China International Famine Relief Commission has adopted the herb-picking scheme of "labor relief" and it is proving helpful.

According to the Peking and Tientsin *Times*, "The herb, which grows wild by the roadside, and in the mountains, is akin to the yew tree and has a pleasant aromatic smell. The relief work consists in engaging the villagers of the district to bring in, for a price somewhat above what the very small local market offers, loads and loads of this *ma huang*. Last year's purchase justified the scheme as non-pauperizing and self-supporting.

"This year 200 tons of the herb were brought in, and that amount practically exhausted the supply within a radius of twenty miles, which is about the limit of the distance which it pays men to transport the herb.

"To see the villagers bringing in their daily cuttings was to make a study in transport. Men's backs and carrying poles, big two-men barrows and little ones, carts large and small, donkeys, cows and camels, all crowded round the gates waiting admission. When the gates were opened, it needed no little organization, and no less use of vocal organs, to sort out the line-up for the weighing of loads, carts in one place, beasts in another, and men separately. Drying, stacking and packing for export were all accomplished by famine labor."

The present is the third consecutive hard year in Shansi province, and the herb picking serves as timely relief.

Good Work of the Carville, La., Leprosarium.

In spite of the fact that the treatment of leprosy is tedious, it is stated that during the past sixteen months, twenty-four patients have been discharged from the National Leper Home

at Carville, La., as recovered or "arrested". It is a matter of interest to note that the Public Health Service has devised a painless method of administering the injections of chaulmoogra oil by mixing a harmless anesthetic with each dose. This is a boon to the patients, many of whom found the injections week after week for months and years quite painful.

Dr. J. Frank Folk,

Of the class of '26, Medical College of Virginia, is now located at Warrenton, Va., where he is associated with Dr. John L. Thornton in doing general practice.

The American Academy of Ophthalmology and Oto-Laryngology.

At its annual meeting in St. Louis, Mo., the middle of October, elected Dr. William H. Wilder, of Chicago, president-elect; Dr. William P. Wherry, Omaha, Nebr., executive secretary; and Dr. Secord H. Large, Cleveland, O., treasurer. Dr. Harris P. Mosher, Boston, succeeded to the presidency. The 1929 meeting will be held at Atlantic City, N. J.

Dr. and Mrs. Joseph Bear

Returned to their home in Richmond, Va., the middle of November, after a motor trip of sometime to Chicago, Detroit, Canada and Buffalo. While in Chicago, Dr. Bear spent sometime at the Chicago Lying-In Hospital doing post-graduate study. He also attended special clinics in Buffalo while away.

Children and the "Movies".

How important is the question of children attending the "movies"? Rather so, because of the enormous number attending. In Los Angeles it was found that 60,000 children under the age of twelve were going to the picture shows every week, and in a large group of school children in Kansas, a typically rural State, nearly half of the eight-year-old children and two-thirds of the fourteen-year-olds went once a week or oftener. These facts indicate the need for regulating indiscriminate attendance by children, for higher standards in the matter of pictures on the part of parents and the general public, and for the cessation of the habit of parking unattended children at the moving-picture theaters, which some parents seem to find an easy way to assure themselves an evening for their own amusement purposes free from responsibility for their offspring.

Dr. Beverley F. Eckles

Recently resigned as one of the general surgeons on the staff of the McGuire Clinic, Richmond, Va., to accept the position as chief of the surgical department of the Galax Hospital at Galax, Va. Prior to entering upon his new duties on November the 15th, Dr. Eckles took a post-graduate course in the surgical specialties in New York City.

Southern Medical Association.

The twenty-second annual meeting of this Association was held in Asheville, N. C., in November, under the presidency of Dr. William R. Bathurst, of Little Rock, Ark. One of the most important business matters before this meeting was a discussion as to the purchase of a permanent home in Birmingham, Ala., and a committee was appointed to look after this. Miami, Fla., was selected as the 1929 meeting place and the following officers elected: President, Dr. Thomas W. Moore, Huntington, W. Va.; vice-presidents, Drs. Paul H. Ringer, Asheville, N. C., Edward C. Ellett, Memphis, Tenn., and Felix J. Underwood, Jackson, Miss. Mr. C. P. Loranz continues as secretary-manager and Dr. M. Y. Dabney as editor of the journal.

Conference of State Secretaries.

Secretaries of the constituent state medical associations of the American Medical Association met in Chicago, November 16 and 17, as guests of the Association, for their annual conference. Dr. Thos. B. Throckmorton, of Iowa, was selected as chairman for the three sessions.

Talks were made to the state secretaries and editors by officers of the Association and several specially prepared papers were presented on subjects of interest to these officers. The discussions which followed the papers showed that all state organizations have many problems in common. On the afternoon of the first day, the "Harvey Film" on the circulation of the blood was shown and it was stated that this would be loaned to state or local societies upon request.

The State Colony for Epileptics and Feeble-minded,

At Colony, Va., has recently issued its nineteenth annual report for the fiscal year ending June 30, 1928. This states that during that year, the institution was constantly crowded to the extreme limit of its capacity. However, a new dormitory for males is to be constructed which will have space for 177 beds and this addition, when completed, will relieve the congestion in the male department.

During the year, 115 patients received training in the academic and industrial departments of the Colony school and were much benefited by these opportunities for development which had hitherto not been afforded them. A number of patients entered as illiterates learned to read and write very creditably, and many other patients were given useful instruction and interesting employment in various sorts of handcraft. Outside of the school proper, several hundreds have received the benefit of occupational therapy by employment in the various departments of the institution.

Dr. Walter B. Martin,

Norfolk, Va., who was prevented by personal illness from attending the Danville meeting of the State Society and opening discussion on the symposium on "The Anemias" as listed on the program, is now much improved.

A Correction.

In the September issue of the MONTHLY, we published an editorial on "Our Centenarian Medical Schools". Recently we were advised that Dartmouth Medical School, Hanover, New Hampshire, should have been included in this list as it this year commenced its one hundred and thirty-second session.

We regret the omission of this college in the above mentioned editorial and are glad to note there is another school in the United States entitled to be included with "Our Centenarian Medical Schools".

Dr. J. Shelton Horsley,

Richmond, Va., by invitation, read a paper in the scientific program of the Medical Society of the County of Kings, at its regular meeting in New York, November the 20th, his subject being "The Influence of Physiologic Research on Modern Surgery."

Dental Clinics of Greater New York.

In one district alone of Greater New York there are said to be 20,000 school children whose teeth have been examined but who are waiting for the needed dental care. The dental services available at moderate cost for children and adults in that city have been found to be inadequate, although the city boasts 516 dental chairs in actual use in 152 public and private clinics. One reason for this inadequacy is that the equipment has been used less than half the time because of lack of available funds to pay dentists.

Dr. O. C. Page,

Formerly of Brodnax, Va., is now located at Hopewell, Va., where he is engaged in the practice of his profession.

Dr. Paul W. Howle,

Richmond, has been elected one of the new directors of the Country Club of Virginia.

The Golden Rod Slip.

In this issue of the MONTHLY, members of tht Medical Society of Virginia will find a golden rod slip. If used by them in place of bills, it will save the Society financially and also give the office force time which may be used for other purposes.

Members who have already paid for 1929 should ignore this slip.

Medical Profession of Western Hemisphere to Congress in Havana.

The next congress of the Pan-American Medical Association will be held in Havana, Cuba, from December 29, 1928, to January 3, 1929. The program, which is being arranged by the President, Dr. Fred H. Albee, of New York City, will be a strong one, and will include four orations, upon the subjects of surgery, medicine, pediatrics, and tropical medicine.

Dr. William J. Mayo will give the Oration on Surgery, and Dr. Lewellys Barker, of Johns Hopkins University, the Oration on Medicine. Papers will be read in both Spanish and English.

This congress will be representative of the medical profession of the entire Western Hemisphere. Chapters of the Association have been and are being organized in various centers of North America and Central America, as well as in the Antilles, all of which will be represented at the Congress.

One of the recent accomplishments of the Pan-American Medical Association is the establishment of the Pan-American Hospital in New York City for the benefit of the Latin-speaking people.

A large attendance is solicited.

Select Physician for Your Patients Travelling Abroad.

With rare exceptions hotels in Europe refuse to give the address of American or English doctors, endeavoring always to have the hotel doctor employed, who they claim speaks English perfectly. When this doctor arrives, if he speaks English at all, it is usually so poorly that the patient does not fully understand him and he feels that the doctor has not

fully understood what has been said to him, and consequently is irritated and alarmed and his trouble aggravated.

To overcome this boycott, the "Continental Anglo-American Medical Society" was organized in 1885 and in 1889 commenced the publication of a list of the Anglo-American doctors practicing in Continental Europe and Northern Africa; and wishing to establish the closest relations possible with their colleagues in America and England, will send a copy of this list, free of charge, to anyone applying to the Secretary, Dr. Sherwood-Dunn, 54 Bd. Victor-Hugo, Nice, France.

Dr. Julian H. Coleman,

Of the class of '25, University of Virginia, Department of Medicine, is now at the Mayo Foundation, Rochester, Minn.

Dr. Leland O. Mauldin,

Greenville, S. C., was a recent visitor in Richmond, having come on professional business.

The South Piedmont Medical Society

Held its regular semi-annual meeting in Lynchburg, Va., November 27th. In the absence of the president, Dr. W. R. Martin, of Charlotte C. H., the meeting was presided over by Dr. C. D. Barksdale, of Sutherlin, the first vice-president. Dr. George A. Stover, South Boston, was at the secretary's desk. Besides the subject of "Fractures," which was discussed at several angles, there were a number of other interesting papers by members and invited guests. Between the afternoon and evening sessions, the members enjoyed dinner at the Virginian Hotel, as guests of the Lynchburg and Campbell County Medical Society.

Dr. Wilkins J. Ozlin,

Of Dundas, Va., after a prolonged rest, is much improved and is now connected with the medical staff of Catawba Sanatorium, Va.

Tuberculous Children Who Show no Symptoms.

The Mayo Clinic at Rochester, Minn., gives a tuberculin test as a part of the routine examination of every child registered in it. Of 1,000 children six months to fifteen years of age, coming from communities of less than 25,000 population in thirty-five States, Porto Rico, Mexico, and Canada, who showed no evidence of active tubercular lesions, 169 gave positive reactions to the tuberculin test. Two-fifths of these children were underweight, and a small proportion were overweight. The percentage of girls reacting positively was considerably higher than that of boys, and the three cases found among children under two years of age were of girls. Known contact with the disease was reported for less than one-tenth of the 169 children, but family history of the disease was found for nearly one-fifth—a finding similar to that of comparable studies.

Have You Your Christmas Seals?

Eighteen million Christmas seals are being offered for sale in this State by the Virginia Tuberculosis Association,—enough to reach over three hundred miles if placed end to end, or from Richmond to the Kentucky border.

The seals have been distributed by the Virginia Tuberculosis Association to the county and city organizations of the State, and large groups of volunteer workers are busy with the sale of the seals which opened November 30th. In accordance with the agreement between the National Tuberculosis Association and the American Red Cross, the seals were not to be sold until the day after Thanksgiving, at which time the Red Cross Roll Call came to a close.

The office of the Virginia Tuberculosis Association, Atlantic Life Building, Richmond, is busy sending out additional orders as they are received, and answering the numbers of letters arriving by every mail.

Christmas seals pay for education, prevention and cure of tuberculosis.

Research Committee for Chicago World's Fair.

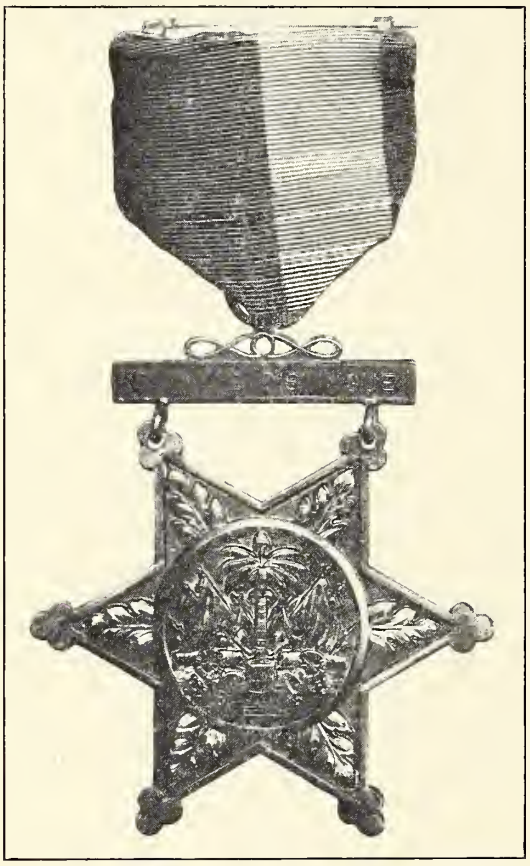
Dr. Max Mason, former president of the University of Chicago, Dr. William Allen Pusey, of Chicago, former president of the American Medical Association, Frank Baldwin Jewett, vice-president of the American Telephone and Telegraph Company, Gano Dunn, Dr. Simon Flexner, Dr. Vernon L. Kellogg, and Dr. Michael I. Pupin, have just been appointed as the National Research Council's Committee to co-operate with the officials of the Chicago World's Fair, to be held in 1933, in developing the scientific theme of the city's centennial celebration.

Commander Boland Honored.

Colonel Micajah Boland, for a number of years a member of the Medical Society of Virginia and known to many of our members, was awarded a medal and diploma by the President of Haiti in July, 1925, and their acceptance by Colonel Boland was authorized by an Act

of Congress approved by the President on the 28th of May, 1928.

We give herewith a photograph of the



"Medaille de Service Distingue", Republic of Haiti, and append a translation of the diploma.

BORNO
PRESIDENT OF THE REPUBLIC OF HAITI
TO ALL WHO SHALL SEE THESE PRESENTS
GREETINGS:

Be it known that the Distinguished Service Medal is presented to Colonel Micajah Boland of the Gendarmerie d' Haiti, who merits the following citation:

"He has directed the Medical Department of the Gendarmerie from 26 August, 1922, to 26 June, 1925, in remarkable and exceptional manner. He has maintained this service in a notable state of progress by his ability, his judgment and his efforts. He has greatly reduced the death rate of the Gendarmerie and likewise of the prisoners and the insane, all to the advantage of the service under his care, as indicated by the records. Research work of great importance, both to the medical profession and to the Gendarmerie, has been accomplished under his direction."

In testimony of which this diploma is presented to the said Colonel Micajah Boland for his service and valor, as is right.

BORNO.

We extend our congratulations to Colonel Boland on this honor.

Suicides vs. Homicides in Virginia.

The State Bureau of Vital Statistics, in a recent bulletin, states that while their statistics show the colored homicide rate in Virginia for 1927 (the killing is usually done by one of their own race) is three and a half times that of the white race, the condition is reversed with suicides, the white rate being more than four times the colored.

The Association of American Medical Colleges,

At its annual meeting in Indianapolis, elected Dr. Burton D. Myers, Bloomington, Ind., President, and re-elected Dr. Fred C. Zapffe, Chicago, Secretary.

Dr. S. B. Perry,

Hopewell, Va., recently tendered his resignation as coroner of that city that he might be reinstated to his place as a member of the City Council of Hopewell.

Dr. James M. Rogers,

Physician in charge of the Alexander Hospital, at Soonchun, Korea, the Southern Presbyterian Mission in Chosen, is now on a furlough in this country, visiting his former home at Amelia, Va. He made the return trip by way of the Panama Canal. In spite of his long distance from base, Dr. Rogers maintains his membership in the Medical Society of Virginia.

Playgrounds Decrease Delinquency.

A decrease of twenty per cent in twenty-five years in the number of juvenile delinquents in Milwaukee, Wis., although the population doubled during that time, has accompanied the spread of supervised playgrounds which the city started at the beginning of the period. In Dayton, Ohio, the sections of the city with adequate playground facilities show thirty per cent less delinquency than the districts which lack them. And a distinct decrease in court cases involving delinquent children has been reported as following the establishment of proper play facilities by 223 of 351 playground directors and superintendents of schools who replied to a questionnaire addressed to them by the magazine, *The American City*, published in New York City. The officials who did not report decreases were mostly from small towns where the delinquency problem is less acute.

An interesting development is increased use of playgrounds after nightfall as a means of luring children from the moral and physical hazards of the city streets at night.

Dr. Drewry Resigns as City Manager of Petersburg.

Following a change in personnel of the city council, and due to political influence, Dr. William F. Drewry, recently resigned as city manager of Petersburg, Va., after a service of five years. In noting his resignation, the Petersburg *Progress-Index* was most complimentary of the work done by Dr. Drewry in his official capacity, stating "We doubt whether any man could have been found who could have executed more skillfully the policy mapped out for him by the city council than has Dr. Drewry."

Dr. Drewry was, for a quarter of a century, superintendent of the Central State Hospital, Petersburg, and has achieved national distinction as an alienist. It is reported that he expects to re-enter actively the psychiatric field.

Periodic Health Examinations by the Family Physician.

According to *Hygeia*, North Carolina is the first state to create a unit of its Board of Health for the specific purpose of furthering periodic health examinations by family physicians. It is stated that this unit has a personnel of one doctor and one nurse who visit county medical societies, parent-teacher associations, civic clubs, colleges and ministers' associations to explain the value of such care.

This is a splendid work and other states would do wisely to follow suit.

Heads Southern Sanatorium Association.

Dr. Paul P. McCain, Sanatorium, N. C., medical director and superintendent of the North Carolina Sanatorium for the Treatment of Tuberculosis, at that place, has been elected to head the Southern Sanatorium Association for the coming year.

Dr. W. L. Devany

Has returned to his home at Dendron, Va., much improved, after undergoing a slight operation at a Richmond hospital.

Virginia Has a Traveling Mental Hygiene Clinic.

Virginia has recently started a traveling mental-hygiene clinic to serve the schools and medical and social agencies throughout the State, and to examine and treat delinquent children. Its staff includes a psychiatrist, a psychologist, and two psychiatric social workers. The Commonwealth Fund has contributed approximately $40,000 for the clinic.

Low Death Rates Among Certain Infants.

The low death rates found among infants insured in the Metropolitan Life Insurance Company by industrial wage-earning parents are ascribed by the company to the care given by its visiting nurses to insured prospective mothers and to acutely sick infants, and to the literature on the care and feeling of infants which it distributes to its industrial policyholders.

The Association of Surgeons of the Norfolk and Western Railway,

At its annual meeting in Cleveland, Ohio, this Fall, elected Dr. J. Francke Fox, of Bluefield, W. Va., president for the coming year; Dr. R. S. Griffith, Basic City, Va., first vice-president; Dr. W. C. Gibson, Suffolk, Va., second vice-president; and re-elected Dr. T. D. Armistead, Roanoke, Va., secretary-treasurer.

The Inter-State Post-Graduate Medical Association of North America.

Dr. John B. Deaver, Philadelphia, became president of this Association at its meeting in Atlanta, Ga., in October. Dr. William D. Haggard, Nashville, Tenn., was elected president-elect; Dr. William B. Peck, Freeport, Ill., managing director; and Dr. Edwin Henes, Jr., Milwaukee, Wis., executive secretary. Drs. William J. and Charles H. Mayo, Rochester, Minn., will be presidents of clinics.

Dr. Joseph Poland,

Of Atlantic City, N. J., has been elected president of the Atlantic County, N. J., Medical Society. He is a member of the staff of the Atlantic City Hospital, specializing in obstetrics, and is a graduate of Jefferson Medical College, class of 1907. Dr. Poland served his interneship in the Philadelphia General Hospital.

Assistant in Pediatrics, M. C. V.

Dr. Lee E. Sutton, a native Virginian, has returned to Richmond after a number of years spent elsewhere in study and work, and is connected with the Pediatric Department at the Medical College of Virginia. Dr. Sutton graduated from the Harvard Medical School, Boston, in 1921, and for the past two years has been an assistant in pediatrics at that school. He has also spent sometime studying his specialty in Vienna.

Foundation for Mental Health Organized.

The establishment of a new philanthropic foundation, known as The American Foundation for Mental Hygiene, Incorporated, was announced at the annual meeting of The National Committee for Mental Hygiene held in New York City, in November. This meeting was attended by over four hundred physicians, psychologists, educators, social workers and lay persons from various parts of the country.

Discussing the plans and scope of the Foundation, Mr. Clifford W. Beers, founder of the mental hygiene movement and Secretary of the National Committee for Mental Hygiene, stated that it is the first Foundation organized "for the exclusive purpose of financing and doing work that will enable men, women and children to live happier, healthier and more efficient lives through a better understanding and management of the processes of their minds and of the controlling forces in human behavior." Unlike most foundations created by persons of wealth interested in specific charities or other philanthropic projects which benefit from endowments immediately available, Mr. Beers said the American Foundation for Mental Hygiene comes into existence without an endowment of its own but with the confident hope of securing the funds necessary to carry out its purposes. The Foundation has already been made the beneficiary of a gift of $50,000 and has also a conditional pledge of $100,000 toward its first million dollars of endowment.

Dr. William H. Welch is honorary president; Dr. Arthur H. Ruggles, president, and Clifford W. Beers, 370 Seventh Avenue, New York City, secretary.

Married.

Dr. James M. Whitfield, Jr., Richmond, and Miss Charlotte Gibbs, Woodstock, Va., November 7.

Dr. John Cecil White, Richmond, and Miss Lucile Bass, in Washington, D. C., recently.

The Portland Meeting of the American Medical Association

Already gives promise of being largely attended, judging by the number of advance hotel reservations which have been made, although the meeting is not scheduled to be until July the 8th. The local committee is already making plans for this meeting and urges visiting members to stay over for the Saturday after the scientific sessions, that they may take some of the lovely trips to be had out from Portland.

Golfers will have all the accommodations they wish, as there are eight splendid private golf clubs and ten of the pay-as-you-play type.

Gorgas Health Calendar.

The Gorgas Memorial, 1331 G Street, Northwest, Washington, D. C., has issued the Gorgas Health Calendar, for sale at $2.50 each. Doctors are urged to secure these for their friends (or have them sent direct) as the modest profits derived from the sales will become a part of the Gorgas Memorial Endowment Fund.

The calendar for each day contains a health maxim by an outstanding man in medicine, philosopher or statesmen. The especially designed stand—size 7¼x4½ inches—is handsome, sturdily built, mahogany finish, equipped with rubber feet. This calendar is an appropriate holiday gift, and will be sent direct, prepaid, with your card enclosed when so ordered.

Orders should be sent above address promptly as only a limited number of these calendars is available.

Virginia Battles Against Diphtheria and Promotes General Child Health.

Since the beginning of 1927 the Virginia State Board of Health has immunized 250,000 children against diphtheria. In 1927 the State showed the lowest death rate from that disease in its history. There was a reduction of 18 per cent in the number of cases and of 38 per cent in the number of deaths from the record of the previous year, although in the United States as a whole there was a general increase in the incidence of the disease. Clinics for immunizing the children were held in the rural schools, local physicians and the State department of education co-operating with the staff of the board of health, to which additional physicians and nurses and a publicity agent had been appointed to carry out the campaign.

The board of health is also carrying out a general health campaign among school children, largely through arousing interest in winning the "five-point" certificates which it issues to every child who comes up to the board's standard in regard to teeth, weight, sight, hearing, tonsils and adenoids. One county has increased its number of five-pointers from 200 to more than 900 in a single year, and another

has more than 2,400. The State employs ten dentists who travel about among the rural schools with portable equipment, charging a nominal sum for their work. The State society of throat specialists has planned for the holding of tonsil clinics, and county nurses give much aid. Teachers are now required to qualify themselves for the physical inspection of their pupils and, according to the supervisor of school dentistry, they usually discover about 65 per cent of the teeth defects, which, he says, is "a whole lot better than nothing."

Dr. Mortimer H. Williams,

Of Roanoke, Va., has been in Europe since the early part of September, and is engaged in post-graduate work in diseases of the eye, ear, nose and throat at Vienna and Budapest.

Dr. Williams expects to return to this country some time in April, at which time he will resume his work in Roanoke.

Dr. L. H. Apperson,

Richmond, Va., has been appointed a surgeon to the Southern Railway, to succeed the late Dr. E. Govan Hill, with whom he was associated in practice.

Special Issue of American Medicine.

The November issue of *American Medicine* is a special "Food, Nutrition and Diet Number." This issue includes twenty-nine articles in three sections—Nutritional Factors, General Dietary Factors, and Diet in Disease. These articles have been written by invitation especially for the practical use of the busy practitioner and present a splendid idea of modern nutrition and diet.

Dr. William R. Martin,

Charlotte C. H., Va., has been in New York City, since October 1st, taking courses in pediatrics and internal medicine at the New York Post-Graduate Medical School and Hospital. He will also make observations at Dr. Polak's Clinic at the Long Island College Hospital, Brooklyn, N. Y., before returning home the 1st of January.

Other Virginians attending the Post-Graduate at this time are Drs. J. P. Trent, Farmville, W. R. Warriner, Crewe, and G. L. Morriss, Buckingham.

Food, Drug and Insecticide Administration Report.

The Food, Drug and Insecticide Administration has just submitted its report to the Secretary of Agriculture. This is the first annual report by the administration which was created in its present form July 1, 1927, to centralize and consolidate many of the regulatory functions entrusted to the Department, and to divorce these from the strictly research activities. This agency is responsible, among other things, for the enforcement of the food and drugs act. Under this act, the administration made 748 seizures and instituted 267 prosecutions in the year ending June 30, 1928. The largest group of seizures is listed under the headings of "remedies", drugs and drug products.

Dr. Andrew D. Hart,

Of the class of '27, University of Virginia, Department of Medicine, after interning at Jefferson Hospital, Roanoke, Va., has located in Charlottesville, Va., where he is engaged in general practice.

Dr. William I. Prichard

Has resumed his practice in Petersburg, Va., after a rest of some months during which time he has been recuperating from the results of an automobile and train collision.

Mortality From Automobile Accidents in 1927.

The Department of Commerce announces that in the registration area of continental United States (including only 91.3 per cent of its total population) there were 21,160 deaths in 1927 charged to automobiles and other motor vehicles (excluding motorcycles), and that the death rate from this cause was 19.5 per 100,000 population. This rate shows a steady increase each year. The deaths assigned to automobile accidents do not include those due to collisions of automobiles with street cars and with railroad trains. As in 1927 there were 476 deaths due to collisions of automobiles with street cars and 1,676 due to collisions with railroad trains, these would raise the number of deaths in automobile accidents to 23,312, or 21.5 per 100,000 population.

Dr. R. S. Faris,

Well known homeopathic physician of Richmond, Va., was elected president of the Southern Homeopathic Association at its meeting in Cincinnati, early in November.

New Zealand Leads the World in Saving Infants.

An article entitled "Infant Welfare in New Zealand," which describes the methods by which that British Colony brought about in 1927 the remarkably low infant mortality rate

of less than 39 per 1,000 live births, appears in the September, 1928, issue of *Hospital Social Service*, published in New York City. With this rate New Zealand leads the world.

The Post-Graduate Medical Society of Southern Virginia

Held a special meeting in Petersburg, Va., on the afternoon of November the 20th, at which time scientific papers were read by Drs. Alex. G. Brown, Jr., and Garnett Nelson, of Richmond, and Dr. Samuel Skillern, Jr., of the University of Pennsylvania, Philadelphia. Discussions on these papers were opened by Dr. S. W. Budd, of Richmond, and Dr. F. J. Wright, of Petersburg. After the scientific program, the members were entertained at the annual banquet of the Petersburg Medical Faculty, held at the Country Club.

On this occasion, the Petersburg Medical Faculty also elected the following officers for the ensuing year: President, Dr. E. W. Young; vice-president, Dr. W. B. McIlwaine; secretary-treasurer, Dr. John Harwood; and corresponding secretary, Dr. Ruth Mason.

New Secretary of the Post-Graduate Society.

At the regular meeting of the Post-Graduate Medical Society of Southern Virginia, held at Lawrenceville, Va., November the 13th, Dr. Philip Jacobson, Petersburg, was elected secretary, succeeding the late Dr. William C. Powell.

Civil Service Examination.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examination for medical adviser and assistant medical adviser to fill vacancies in the Food, Drug and Insecticide Administration, Department of Agriculture, for duty in Washington, D. C., or in the field. Applications must be on file with the Commission not later than December 29th.

Dr. Randolph McCutcheon,

Of the class of '24, Medical College of Virginia, recently of West Virginia, has located at 103 Arlington Avenue, Colonial Heights, Petersburg, Va., for the practice of his profession.

Coroner of South Richmond.

Dr. Sydney J. Baker has been elected coroner of South Richmond to succeed Dr. R. W. Paul who resigned just after he was appointed to fill the vacancy caused by the death of Dr. E. Govan Hill.

Opening for Physician.

Excellent opening for young wide awake physician in nice town of 1,800, good back country. Need thoroughly competent man, pleasing personality, who will stick on job. Write Prince Drug Company, Lawrenceville, Va. (Adv.)

Obituary Record

Resolutions on Death of Dr. E. Govan Hill.

The following resolutions were adopted at a meeting of the Richmond Academy of Medicine held on the 13th of October:

WHEREAS, God in His wisdom, on October 14, 1928, saw fit to remove from our midst our friend and co-worker, Doctor Edward Govan Hill, and

WHEREAS, he has been a loyal and faithful member of the Richmond Academy of Medicine for many years, during which time he enjoyed the confidence and esteem of the entire profession, and

WHEREAS, his interest in the newer contributions to medicine, particularly the treatment of diabetes, was an inspiration to those with whom he was associated, and

WHEREAS, his Christian character and beneficent influence endeared him to a large clientele. Therefore, be it

RESOLVED, that the Richmond Academy of Medicine keenly feels the loss of one of its most valuable members, and that we extend to the bereaved family our deepest sympathy in their sorrow, and be it further

RESOLVED, that these preambles and resolutions be spread upon the minutes of the Academy, that a copy be sent to the family, and that they be published in the VIRGINIA MEDICAL MONTHLY.

(Signed)
THOS. D. JONES,
WM. H. HIGGINS,
A. C. MONROE.

Dr. John M. Carrington,

A retired physician whose home was near Clover, Va., died November the 7th, at the age of sixty-eight years. He was graduated in medicine from Vanderbilt University, Nashville, Tenn., in 1885. His wife survives him.

Col. Champe Carter McCulloch, Jr.,

Of the Medical Corps of the U. S. Army, (retired), recently of Cumberland, Md., died at Walter Reed General Hospital, Washington, D. C., October 14th. He graduated in medicine from the University of Virginia in 1891, and retired in 1922 after thirty years' service in the U. S. Army.

Dr. William Nathaniel Berkeley,

A graduate of the University of Virginia, Department of Medicine, in 1891, for many years a resident of New York City, was found dead in his bed October 23rd.

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THE BUSINESS OF KEEPING WELL.*

By SEALE HARRIS, M. D., Birmingham, Ala.

An encoré is a compliment that is always gratifying. Having had the privilege of addressing the Virginia State Medical Association four years ago, to be invited to address you on this occasion makes me feel that the Virginia doctors whom I esteem so highly are my real friends. I assure you that I greatly appreciate the honor and it fills my heart with joy to be with you at another one of your annual meetings.

The Virginia State Medical Association is performing a real service to the public in arranging for popular addresses at its annual meetings. There is much that the public needs to know regarding the prevention of chronic diseases, particularly those that impair business efficiency and that shorten the productive period of life. There is also much medical knowledge that the physician fails to apply to himself, so that in my remarks on "The Business of Keeping Well" I hope to appeal to the reason of both the layman and the medical man.

Business Efficiency.

Most men at 60, and some at 50, are forced to retire because they feel that their years of business or professional activity have passed, or they die from the diseases of old age; and, too many women are old at 50 or 60. This should not be true, because any young adult with good heredity, who will apply our present knowledge of personal hygiene, should live to be 90 to 100 years old and should be able to do a full day's work without discomfort up to 80 or 90. If men and women of middle age will learn the accepted rules of health and live by them, likewise they can extend their years of efficiency, and can postpone the infirmities of old age. Any physician who has studied the question of personal hygiene and longevity will agree that these statements are true. It therefore would seem to be good business for every man and woman to give a little thought and some effort to keeping well, and by so doing increase efficiency and add years to the productive period of life.

Success in a business or profession is due to applied skill, energy and endurance. Two of these three qualities most assuredly depend upon health. The care of the human body therefore is the most essential element in success in any line of work. Though Americans are the most successful people in the world, they have yet much to learn about efficiency, and particularly in its relationship to personal hygiene. The criticism of Europeans that "Americans know how to work but do not know how to play" applies to many of us.

The advancement in preventive medicine in the last quarter of a century has brought about an enormous reduction in the death rates of children and young adults, from tuberculosis, typhoid fever, scarlet fever, diphtheria, and other infectious diseases; but against this gain during the same period there has been a considerable increase in the death rate after 50, particularly from the degenerative diseases, i. e., of the brain, heart, kidneys and arteries.

The results accomplished in the decrease of infectious diseases have come from campaigns of education which have taught all classes of the public the important facts regarding the contagious and transmissible diseases. Some of the causes of chronic disease are well known to the physician, and an earnest effort is being made by many leading men in the medical profession to inform the public regarding errors in daily living that decrease efficiency and longevity. These efforts of progressive physicians have proven discouraging at times because men and women are too much interested in the game of life such as law, medicine, politics, housekeeping, society, the rearing of children, and the thousand and one other vocations to realize that they are attempting more than they have the physical strength to accom-

*An address by invitation before the Medical Society of Virginia, in Danville, Va., October 16, 1928.

plish. They have neither time nor inclination for their minds to be diverted into channels of thought about personal hygiene; and only too often they are inclined to regard as cranks those who talk about preventing chronic diseases. The infirmities of old age they accept as "ills that human flesh is heir to" and not of their own making. They cannot be made to see that they may add five, ten, twenty or thirty years to their lives and at the same time be happier and more useful in their respective vocations. They will not learn that the laws of physiology which govern the human body are unchangeable, and that he who transgresses them will find the way hard.

Most men and women violate the laws of Nature because they have not been taught the very first principles of personal hygiene. Schools and colleges have taught the classics and sciences, but have neglected the subject of personal hygiene which is quite as important for the success and happiness of any man or woman. Churches in their combined attacks on alcohol have taught the American people the evils of intemperance as to drink; while many of those who preach against alcohol decrease their own efficiency and shorten their lives by intemperance in eating and by sedentary and unhygienic habits. A wife may upbraid her husband for drinking, and rightly so; yet she herself may injure her usefulness and may be making her husband and children unhappy because of the worry habit that wrecks homes as surely as does alcohol. The worry habit is also one of the causes of failure in business.

Thomas Jefferson is credited with saying: "The present generation is already lost; teach the youth of the country," and as the crowning glory of his life he founded the great University of Virginia. Jefferson was partly right in this statement, because it is difficult to teach men and women who usually have fixed ideas about their habits of living; yet, after practicing medicine for one-third of a century, I think that it is easier to teach adults the rules of health if one can get their attention, because exuberant youth does not feel the necessity for conserving health and vitality; and while children learn easily they do not always reason, and they are prone to forget the serious things of life.

Up to this time physicians have not had opportunity of teaching personal hygiene except to the sick, when often it is too late to be of much value. In the last decade, however, men and women have begun to learn that their success and happiness depend upon right living and that health can be attained only by obeying the laws of health. It, therefore, is the duty of the medical profession to give to the public the facts regarding personal hygiene, that the health and lives of the most useful men and women of this generation may be conserved.

The Penalties of Success.

Some years ago the Medical Director of an "old line" life insurance company told me that the worst classes of risks with which his and other life insurance companies have to deal are the successful business and professional men (including doctors). They are the finest type of men in every community, they enjoy large incomes, and apply for policies of from $50,000.00 up. He said that the age of expectancy of such is low; though they may stand perfect physical examinations, they often die in a few years of some form of the degenerative diseases, i. e., of the heart, arteries, kidneys and brain.

This statement called to mind the observation that I and others had made, while attending clinics in various European cities in 1906, of the large number of widows from 40 to 60 years of age, who were educating their children in Berlin and Vienna, or who were sightseeing or living in England, France, Italy and Switzerland. Their husbands had worked themselves to death accumulating fortunes for their wives and children to enjoy.

I recall a number of successful business men who consulted me for symptoms which they thought of little consequence, but on examination it would be found that they had a rise in blood pressure, with a few casts in their urine, early evidences of arterial degeneration or kidney lesion. They gave no history of any illness or infection that could account for the condition, but they admitted business worries, overwork and long hours. Often they also ate excessively, particularly of meats, smoked immoderately and only too frequently were guilty of over-indulgence in alcohol. They were warned that they were traveling the pace that kills; and while a few learned to live rational lives and were saved, the majority corrected their unhygienic habits for a few days or weeks

only. They were "in the game" of a strenuous life and could not see where they could quit or slow-up, until a stroke of apoplexy, angina pectoris, heart failure, Bright's disease, mental breakdown, or other fatal diseases would develop, when nothing could be done for them.

The mental and physical wrecks that we see every day are not confined to men. Every observant physician knows that the most overworked class of people with whom we have to deal are the mothers and homemakers, who are the first ones in their homes to begin work, and there they remain all day and until late at night, worrying about servants and the "deadly drudgery" of housekeeping, and the care of the children. Another class who break down early are the society women, church workers, and those misguided women who live on excitement. In addition to their social obligations or philanthropic efforts, they have the responsibilities of caring for home and children.

Every physician who has had a large experience in dealing with chronic diseases has been saddened to see many useful men and women die in their prime of tuberculosis, or of heart, kidney and arterial diseases. These human wrecks are gathered from the best and the most useful members of their communities, they are among the educated and the intellectual classes, i. e., college professors, lawyers, statesmen, and the leaders in every line of work.

The women who wear themselves out, as a rule, are of the highest type of culture and graciousness. They are well read in a general way and yet they are woefully ignorant of the first principles of physiological living. Their lives are made miserable and their days shortened from chronic diseases brought on themselves by worry, sedentary habits and long hours at work without recreation, or from morning, afternoon and evening bridge, or other parties which are responsible for many of the "nervous wrecks" among society women.

Lessons from the Lives of Three Great Presidents.

We may learn much about keeping physically fit from the lives of three great Presidents. Roosevelt, Taft and Wilson represent three distinctive types of personality; yet each of them may be considered as a prodigy in efficiency. It happened that a splendid Virginia gentleman, a great "health master", a man whom I am proud to call my devoted friend, Admiral Cary T. Grayson, was at different times the medical advisor of these three great presidents. It may be added that a physician who served with perfect satisfaction three presidents as widely different in temperament and physique as Roosevelt, Taft and Wilson must not only have been a wise and good doctor, but a diplomat of the highest order. Dr. Grayson played tennis with Roosevelt and kept him feeling fit to wield "the big stick" all the time; he rode horseback with Taft, reduced his waist line and kept him smiling; and he played golf with Wilson and increased his weight and physical vigor. There is no doubt but that our Nation owes a debt of gratitude to Admiral Grayson for keeping these three Presidents physically fit and thereby increasing their ability to serve the American people.

The Strenuous Roosevelt.

Every thinking man will agree that Theodore Roosevelt was one of the greatest Americans of all time, and we may learn some splendid lessons in personal hygiene by a study of his life. When Roosevelt was a boy in his teens his parents feared that he had tuberculosis and sent him West. There he lived the open-air life of a cowboy and developed into robust manhood, but for many years he had to be careful about his health to avoid physical disaster.

I cannot discuss in detail the great achievements of Roosevelt, but when he ascended to the Presidency the American people saw an exhibition of such strenuosity and efficiency in office the like of which they had never before seen. Roosevelt was tireless in his efforts to carry out his ideal of making the United States a better place in which to live, and he did accomplish much that made history for himself and for his country. He believed in doing things and his heart's desire was to lead the Nation in an effort to bring about reforms in government in which he believed.

Perhaps the great defect in Roosevelt's life was in his lack of a sense of humor. He took everything in life too seriously. He never had a real vacation after he came back from the West. Even his hunting trips were strenuous and he spent every moment when he was not in action in reading and writing. In his anxiety to make the world better he gave too much of himself towards the accomplishment of that ideal. Roosevelt led a full, efficient life

but he died many years before he would have had he lived a little less strenuously, because with his splendid physique he should have been active until he was 80 or 90 years of age.

Perhaps one of the reasons for Roosevelt's death at 63, when he should have been in the prime of his life, was the fact that he took on weight after 50, which, according to observations of life insurance officials is a hazardous handicap for any man or woman.

Roosevelt did not dream of the penalty he would have to pay in leading the strenuous life; but think of what America lost by his untimely death. Roosevelt was the recognized head of the majority party when he died, and no doubt had he been alive he would have been President of the United States at a time when his leadership would have meant so much to the world.

Roosevelt's example and high ideals should be an inspiration to the youth of this and future generations; but the overworked man may well pause and consider the dangers of the strenuous life. Certainly the average person would shorten his days and actually defeat his purpose in life by attempting the physical and mental achievements of the "rough rider" President.

The Serene Taft.

We may profit also by studying the personal habits of another great President, the serene and complacent William Howard Taft. Mr. Taft went into the White House handicapped by more than one hundred pounds overweight, and every student of longevity knows that obesity shortens life more than any other cause. The probabilities are that if Mr. Taft had not followed the advice of his physician, Dr. Grayson, and reduced his flesh slowly and intelligently, his administration would have been less successful, and years before this he would have paid the penalty of indiscretion in eating.

Perhaps one of the reasons why the years of arduous effort and great responsibility have not destroyed the health and life of Mr. Taft has been his fine sense of humor. The Taft "chuckle" and his contagious laughter have brought delight to every person who has ever come in contact with him; and his evident love for his fellowman has made every one his friend. Mr. Taft's wisdom, statesmanship and judicial temperament make him at 75 the most revered man in public life today.

Mr. Taft is a notable example of one who profited by the advice of his physicians, and any man or woman who is overweight may do likewise; and every man and every woman of any age or weight would do well to cultivate serenity which is one of the attributes of success and longevity.

The Intense Wilson.

In my opinion the greatest example of human efficiency in the history of the world was the first seven years of the administration of our great War President, Woodrow Wilson. From observations of his life when he was Governor of New Jersey and extending through the years of his marvelous achievements as President of the United States to his physical breakdown, we may study with profit the personal habits of one who by following the laws of hygiene added much to his efficiency, but by disregarding the dangers of deadly fatigue broke down his health at a time when he was the dominant figure in the whole world.

I first saw Woodrow Wilson in 1911 as Governor of New Jersey, then 52 years of age. He was delivering an address of welcome to five thousand doctors assembled in Atlantic City at a meeting of the American Medical Association. It was the most marvelous piece of reasoning eloquence, without any effort at flowery oratory, that the assembled doctors had ever heard; but we feared that he would not have the physical strength to live through even one term as President of the United States. The impression that Woodrow Wilson was not a strong man physically was later confirmed by information obtained from friends who knew him at Princeton and also from confidential conversations with his physician, Admiral Grayson.

I had the privilege of an interview with President Wilson about a year after he had been in the White House. He had gained 15 or 20 pounds in weight, he had the look of rugged health and he was bubbling over with mirth, a sure sign of physical strength and vitality. I opened the conversation by congratulating President Wilson on his good fortune in the selection of his physician; and said to him, "Mr. President, I hope you will use Dr. Grayson as a 'health master' to keep well rather than wait until you are sick to consult him." President Wilson laughed and said, "I have found that it pays to follow Dr. Grayson's

advice and I am trying to obey all his instructions regarding my health. Before coming to the White House I was very susceptible to colds. Dr. Grayson advised me to go to bed on the first appearance of a cold and I found that 24 hours in bed usually relieved me. It happened on one occasion that I could not follow Dr. Grayson's advice about going to bed, but later found that I had to lay up for several days because I did not follow my physician's instructions." I may add in passing that Dr. Grayson's advice to rest in bed for a day at the beginning of a cold is a better remedy than all the medicines in the drug stores that have been prescribed for colds.

Knowing that the President had been far from a well man when he was Governor of New Jersey, and that at the time he was elected President he was under the care of a celebrated gastro-eterologist in New York, I said to Dr. Grayson, "What have you done to President Wilson that so improved his health and that has made him physically fit for his arduous duties as President?" Dr. Grayson said that when President Wilson came to the White House he showed evidences of years of overwork and insufficient sleep and that he was suffering from indigestion. He was very susceptible to colds and for years had suffered from periodic headaches which physicians know often precede and may be an early expression of chronic Bright's disease. Dr. Grayson said that he had been able to persuade President Wilson that if he would enjoy good health and not break down from the arduous duties of the presidency, he must follow the simple laws of hygiene.

The daily routine advised by Dr. Grayson and which President Wilson followed during the years of his marvelous achievements, would add to the health and efficiency of any other man. It was as follows:

1. Nine hours' rest in bed at night.
2. A few minutes' physical setting-up exercise before the morning bath.
3. A carefully regulated diet, eliminating cane sugar and its products entirely.
4. One hour rest period at noon.
5. Not more than eight hours' work a day.
6. A walk or ride in the open air and sunlight every day.
7. Golf two or three afternoons a week.

President Wilson lived the perfect hygienic life in spite of the demands of his duties as president during the World War and remained in splendid physical condition until his second trip to Paris to the Peace Conference, when he did not take time for rest, golf, or other recreation; and for the first time failed to follow the advice of Dr. Grayson. No doubt as a result of fatigue he had a serious attack of "flu" a few weeks after his return to Paris and he did not give himself time to recuperate before he was again at the Peace Conference. Even after his return to the United States if he had followed Dr. Grayson's advice and had not made the long Western trip, which was the immediate cause of his death, he probably would have been living today.

I am sure that had President Wilson not been a victim to illness, the direct result of overwork, he would have accepted the Senate amendments to the Paris peace pact, the United States would have done her duty by her Allies and would have become a member of the League of Nations; and I am one of those optimists who believe that, had not Woodrow Wilson forgotten himself in his zeal to serve mankind, world peace for all time would have been established.

Food and Efficiency.

"We dig our graves with our teeth" is a trite saying that seems figuratively true when we study the eating habits of 95 out of every 100 adult Americans. Go into any cafe, quick lunch place, hotel or dining-car, or go into the homes of all classes, and watch the "grave diggers" hurriedly devour large quantities of lean meats and white bread, and sweets of all descriptions three times a day, without a thought of their vitamin content and of the amount of proteins, carbohydrates and fats needed to maintain normal nutrition. See them swill sugar saturated coffee and tea which contains a harmful habit-forming drug, caffein, with each meal; and see them flock into soft-drink stands, candy shops, at all hours of the day and night, and you will find that the average person, if he knew anything of food values and the nutritional needs of the body, could live on less than half the amount he now spends for food and drink and be healthier and more efficient; not to mention the fact that he would live years longer on a rational well balanced diet. Does it not seem that it would be good business for any man or woman to learn the

simple principles regarding diet and nutrition?

Some twenty years ago, Alfred McCann wrote a series of articles for the *New York Tribune*, and later a book on "Starving America", in which he called attention to the fact that largely for commercial reasons we are living on "devitalized" foods, i. e., white flour bread, pies, cakes, white rice, bolted cornmeal, rolled oats and other commercial breakfast foods; white sugar and its various products, candy, ice cream, and soft drinks; corn and cane syrup; oleomargarine butter; coffee and tea; and cold storage meats, pork and beef particularly. Though a layman, McCann was one of the pioneers in bringing to the attention of the public the serious consequences of our changed eating habits in the last seventy-five years; and he urged the American people to go back to the diet of our fathers and grandfathers who lived on whole wheat flour, whole grain cornmeal, whole grain rice, whole grain oatmeal, pure butter, honey, maple sugar, brown sugar and very little of that, eggs and chickens, home-raised and home-grown meats, and plenty of fruits and vegetables. Recent studies in nutrition have proved that McCann was right in his contention that though most Americans eat too much they are not properly nourished, and are actually starving while their stomachs are full of devitaminized foods.

Among the most remarkable discoveries of this scientific age are those that have been made in nutritional laboratories, proving the existence of protective substances, vitamins, in food. A deficiency of vitamins in food will impair health and shorten life as certainly as two and two make four. It, therefore, is worth while for a man or woman who would be efficient and who would add a few and perhaps many years to the productive period of life to learn the facts regarding the vitamins.

It is simple and easy to live on a well balanced diet, one in which the three daily meals are rich in all of the vitamins. Indeed one does not realize the joy of living until he knows the reasons why the most palatable foods known to man are those which when eaten intelligently will give him a clear head and a sound body.

McCollum's dictum of a perfect nutritional day should be followed by those who would enjoy health and efficiency. It is as follows: Every adult should have from a pint to a quart of milk, one raw fruit, one raw vegetable and two green vegetables a day. In addition to this, he should have a sufficient amount of meats, breads, potatoes, and other starches, proteins and fats to maintain his normal body weight.

Excessive eating surely shortens life and decreases efficiency. Fat and laziness are supposed to go together. Unquestionably a person who is overweight is not apt to be so mentally and physically alert as the person of average weight. Life insurance companies are in business for the purpose of making money out of their policy-holders and they will not insure a man 40 per cent overweight, and the person who is 20 per cent overweight is put in a special class, because statistics show that the obese person dies years before his age of expectancy. Overweight after 50 is a serious condition.

Likewise, a person who is underweight has not the physical strength and mental endurance of one who is well nourished. Underweight before 40 renders one susceptible to tuberculosis and nervous and mental diseases; while overweight after 40 is a serious condition because it predisposes to diabetes, brain disease, heart and arterial diseases. The important thing, therefore, is to find the normal weight and learn to eat food that will keep one in the best physical condition.

Modern mothers employ specialists in diseases of children to direct the feeding of babies because they have learned that by so doing they may prevent colitis and other digestive diseases of childhood. It would be equally wise for men and women of all ages to be examined once or twice a year by experts in nutrition, who after a thorough study of the individual, including his mental and physical habits, is prepared to advise a diet and a system or regimen of hygienic living that would add many years to his happiness and efficiency.

Exercise and Business Efficiency.

Efficiency and success in any undertaking may be measured by physical fitness. A person with flabby muscles is lacking in initiative and has not the physical endurance to accomplish his daily task. Mental alertness is usually associated with physical agility. The law that activity means life and prolonged rest decay, applies to the bodies of human beings as it does to everything in Nature. Use develops muscle

while non-use results in atrophy. Regular systematic exercise with the idea of bringing into play every important group of muscles and every joint and ligament in the body should be as much a part of the daily routine of life as three meals a day.

When it is considered that one-third of the blood of the body when at rest is in the muscles and two-thirds in the internal organs, while during physical exercise two-thirds of the blood is in the muscles, it can be readily understood that, if one does not take exercise, the internal organs will suffer from passive congestion and the muscles will atrophy and become stiff and painful from receiving too little blood. There can be no question but that this lack of exercise is one of the causes of pains in the back, muscles and joints of people past middle life, the so-called infirmities of old age. Daily exercise not only increases efficiency for the day it is taken, but postpones senility by keeping the arteries resilient.

Golf is the most wonderful game in the world for both men and women over thirty. It puts into play every muscle in the body without being too violent an exercise. It is played out in the open air and in the sunlight. It takes time to play it and gives one more recreation. It gives a change of mental activity that brings health, happiness and even prosperity to its devotees. Golf has lengthened the lives and added to the joy of living of many thousands of Americans. There is no more healthful sign of the times nor better evidence of the increasing efficiency of the American people than the multiplying golf links throughout the country.

Comparatively few people can play golf, however, but every one can walk for a mile or two in the open air, or sunlight every day. But whether one can play golf or not, he should take from ten to fifteen minutes of one of the very good systems of exercises before the morning bath every day.

The Toxins and Business Efficiency.

The toxins, alcohol, caffein and nicotine, will unquestionably impair business efficiency, directly in proportion to the amount consumed. Life insurance companies have learned from sad experience that the man who indulges in alcohol to excess for many years is short lived, and not one will insure the life of a man who has the reputation of being a heavy drinker. It is difficult to be temperate in the use of alcohol, and since intemperance surely shortens life and impairs efficiency, the man or woman who desires to be most efficient should not use alcohol in any form. A successful man once said to me that he made it a rule never to touch alcohol in any form when he had anything to do; and since he had learned that he could not drink at night and be efficient the next day, he never drank in his home city. He also said that he had learned that he enjoyed his vacations more when he did not drink, so that he became a total abstainer.

One cup of coffee at breakfast may not do a great deal of harm, though it contains caffein, a habit forming drug. It increases efficiency temporarily, but as the effect of the drug dies down about noon, unless one takes another cup of coffee, the curve of efficiency is low for the rest of the day. The excessive use of coffee, tea and the caffein soft drink beverages will surely in the course of time produce inefficiency and even ill health. I have seen many cases of heart, arterial and kidney disease of the type associated with high blood pressure in which the cause seemed to have been the excessive use of coffee, tea and the soft drinks containing caffein.

Undoubtedly, the excessive use of tobacco is the cause of much inefficiency. This will be denied by those who use tobacco regularly, because it is a strange trick of Nature that one cannot realize that the particular thing he is doing can be harmful. But it may be said that tobacco impairs efficiency directly in proportion to the amount consumed; and since it is difficult for any man or woman to remain temperate in the use of tobacco, if he cares for efficiency, when he learns the truth about tobacco he will cut out this useless and expensive habit.

The use of tobacco among women has increased to such an extent that it may be well to mention the fact that because of their more delicate and more sensitive nervous systems, women acquire the various drug habits more readily than men, and physicians who study cause and effect are observing the harmful effects of tobacco on many lovely women. Women have as much legal right to smoke as men, but from a mental and physical viewpoint, for the sake of their children or the children which they hope to have, women should not use tobacco.

The Care of the Human Engine.

It is strange that men pay so little attention to the human engine, which must have the proper fuel to generate energy for its work; and every part of which must be kept running smoothly, or it cannot carry its load. The locomotive engineer inspects each essential part of his engine every day before it starts on its journey, and every few weeks or months it is given a thorough overhauling. This is done to prevent breakdowns on the road, and to prolong the life of the engine.

The man who owns a fine automobile sends it to the mechanician once every month or two for inspection and once or twice a year he sends it into the shop for general repairs. Yet the engine upon which depends a man's success in business, and even his life, goes without thought of preventing trouble, with a load that overtaxes its power from year to year until finally it is wrecked and the load consisting of business and family affairs is thrown into the ditch.

There is no doubt but that many of the mental and physical wrecks that we see about us every day could have been prevented if men had looked after their bodies with the same care that an engineer looks after his engine. One must first learn the physiological functions of every part of the body, as the engineer has to serve an apprenticeship to know the workings of every piece of machinery in his engine; and after man learns his physical needs he must make up his mind to give up a small part of his time each day for the care of the human engine which, when worn out cannot be replaced and which has a far greater value than the iron and steel machine that hauls a railroad train. For, after all, there would be no iron or steel machine without the human machine that has created it. And of what use are the machines or works that man creates, unless we learn how to preserve our human machine so that we may lengthen our days to enjoy our handiwork!

It would be good business for every adult to employ the best physician available to examine him regularly and direct him regarding his habits of eating, work, rest and play that he may prevent or postpone the diseases that disable or cut off the lives of men and women during their most productive years.

Industrial leaders are applying that principle to their laborers who undergo a thorough physical examination before they are employed and annually while they are on the pay roll. However, the officials of great industries, and business men generally, send for the doctor only when they are sick, and often when it is too late for relief. A notable exception to this rule is Mr. Vauclain, President of the Baldwin Locomotive Works, who pays a Philadelphia physician ten thousand dollars a year to keep him in health. The example of Mr. Vauclain in paying a physician well for his services in keeping him physically fit for work is one that may be followed with profit by others.

The Annual Physical Examination.

Successful men pay thousands of dollars every year for life insurance to protect their families in case of continued illness or death, and insurance is surely a good business investment. The best insurance, however, against sickness and death is a thorough physical examination by a competent physician once or twice a year. This examination should be a very thorough one, including a study of the functions of every organ of the body and a survey of the habits of work, recreation, eating and everything in the life of the individual including mental habits that could affect health or efficiency. After a thorough examination the physician should then give his patron written instructions regarding the daily regimen including work, rest and play, that would prevent disease in that particular individual. It is time well spent for the busy man to see his physician perhaps once a month and discuss with him the things that he needs to know to prevent disease.

There is no question but that incipient tuberculosis is curable and that diseases of the brain, heart, kidneys, arteries and of the digestive organs may be stopped if discovered in time. Physicians know that usually such diseases have existed for months or years before the breakdown comes, and often the physician is consulted when it is too late to remedy the damage that has resulted from living an unhygienic life. The old saying that "an ounce of prevention is worth a pound of cure" should have a corollary to the effect that one day's treatment of disease in its incipiency, which may be found at the annual or semi-annual physical examination, is worth months of treat-

ment in a hospital after the disorder has become well established.

A System of Hygienic Living.

It may be well to outline the perfect hygienic day for business and professional men, and all classes of men and women.

1. *Sleep.* Eight to nine hours in bed at night, and a siesta of one-half hour after the noon meal if it can be arranged.

2. *Exercise.* Fifteen minutes' room exercise with windows wide open, preceding the morning bath. Daily ride or walk of one hour per day, or golf two or three afternoons a week.

3. *Work.* Six to eight hours in the office five days per week; three or four hours on Saturday morning.

4. *Serenity.* Worry, anger, fear and other emotions wear more than work; and one should cultivate serenity in all the relations of life.

5. *Recreation.* Dismiss business or household cares after six o'clock in the evenings, and rest the mind after the evening meal by light reading, or by playing some game, or going to the movies or to the theatre. For a man after 40 no constructive work after the evening meal. Frequent week-end trips and a vacation of from two weeks to a month a year are conducive to business efficiency.

6. *Diet.* A sufficient amount, not too much, nor too little, of simple wholesome food each day, including one raw fruit, one raw vegetable, two cooked green vegetables, one quart of milk, and not more than one small portion of meat once a day, and one light dessert.

7. *Elimination of toxins.* Coffee, tea and soft drink beverages containing caffein are unnecessary if one has eight hours' sleep at night and their excessive use is quite harmful. Tobacco and alcohol are harmful in any quanity, and if used at all they should be in moderation.

If one would be efficient and experience the joys of living, he should be regular and systematic in his daily regimen and he must have a worthy purpose in life. The man who keeps himself in perfect physical condition is usually the most successful one; but if he should become so occupied in his efforts to accomplish his purposes, whether in politics, business or professional life that he has no time to follow the simple rules of personal hygiene, he will pay the penalty. It surely is good business to keep well.

2234 *Highland Avenue.*

SOME PATHOLOGICAL OBSERVATIONS ON THE INCIDENCE OF TUBERCULOSIS AND OF CANCER IN FIVE HUNDRED AUTOPSIES.*

By CHARLES PHILLIPS, M. D., Richmond, Va.
Professor of Pathology, Medical College of Virginia.

Last spring when the "Early Diagnosis Campaign," was on in Richmond, the question arose many times among the speakers and clinicians as to just what is the incidence of tuberculosis in a city like Richmond. Investigation of sources where that information might be had reveals that apparently it has never been worked out in our State. Critical examination of the term incidence, necessitates division of the results into one group of what might be called "clinical discoverable" on one hand, and "post-mortem incidence" on the other, for it is obvious that the two methods are dissimilar and lead to different rates. Public health workers might introduce a third element into the discussion, and rightfully so, by calling us to remember that for each death from tuberculosis there are from 10 to 18 "potential cases." These belong usually to the clinical group.

The writer, having become interested in the actual percentage of our people suffering from this disease, thought it interesting to analyse a series of autopsies running over the past eight years and see what the incidence of tuberculosis is there. Accordingly, a group of 507 post-mortem examinations on persons from six months of age and upward have been analysed simply. This group includes work by experienced pathologists and coroners and in most instances the tissues have been subjected to microscopic examination. In a city the size of Richmond and where the service of the Medical College of Virginia covers city patients, it will be manifest that a high percentage of autopsies will be coroner's cases, meaning, from the viewpoint of this analysis, that the chance of detecting tuberculosis by complete examination of the body is lowered. Similarly, in this time the increasing use of automobiles has increased the accident rate, so that the series of 500 includes many partial examinations, such as the head. Again, the College service includes negro patients, and the incidence of deaths from cutting and shooting is unfortunately large and well known. This statistical

*Read before the fifty-ninth annual meeting of the Medical Society of Virginia, at Danville, Va., October 16-18, 1928.

study, while interesting, probably will not be so valuable because of these facts.

The autopsies reveal both tuberculosis that is a primary cause of death and an incidental disease. Out of the series there were only 63 times in which tuberculosis was found in any form, giving a percentage of 12.3. A complete examination of the body was permitted only 49 times or on about 10 per cent of the whole, but this revealed only 26.5 per cent tuberculosis. Complete autopsies on adults gave 24.4 per cent tuberculosis, most of this being pulmonary, and much of it incidental, such as healed apical lesions. The profession in this country has believed for years that complete post-mortem examination of the bodies of nearly all adults would reveal tuberculosis in some form. Our results are on too small a series from which to generalize, but they show that less than one-fourth of adults in Richmond coming to our routine complete autopsy have tuberculosis, and the group is possibly a fair but small cross-section of the city population. The writer draws no conclusions from so small a number of complete autopsies, but it is interesting to note how low is the rate when studied.

Cancer in this study is simply defined as any malignant tumor and, although we have classified all these growths, there are really only four divisions, carcinoma, sarcoma, glioma and malignant endothelioma. We recognize the difference in types of glioma, but since all these cases were deaths from them, no further classification is included here. Out of the 507 post-mortem examinations, cancer was found 44 times, or in 8.6 per cent of the whole. Of these, 22 were brain tumors, twenty carcinomas and two sarcomas. This high rate of one-half of brain tumors is due primarily to the clinic of neurological surgery at our college hospitals, and it is not our contention that the same rate holds in our general population. Carcinomas were of uterus, stomach and intestinal tract chiefly, but there was a sprinkling of involvement of other organs. Cancer in our series has occurred largely in adult years, although there have been brain tumors as well as other fatal neoplasms in persons below twenty.

Resume.

A statistical study of 507 autopsies has been made on cases in Richmond from six months of age and upward and observations made on the incidence of tuberculosis and cancer.

It is shown that, of the total, 12.3 per cent had tuberculosis in some form; that the incidence among those bodies on whom complete permission was obtained was 26.5 per cent; that the incidence among adults with complete permission was 24.4 per cent. While the number of bodies completely examined was small, those whose abdomen and chest was opened was very large, actually giving us opportunity to study closely the site of the commonest lesions.

Clinicians and public health workers estimate a rather large incidence of tuberculosis in Virginia, but this brief study of autopsies does not confirm this. In studying the incidence of this disease, we ought to divide cases into two groups, "clinical discoverable" and "post-mortem." A more thorough and prolonged study of this problem is desirable.

The incidence of cancer among 507 autopsies was found to be 8.6 per cent, with the neoplasms occurring in the usual sites. One-half of this group were brain tumors, this large incidence probably being due to the neurological clinic which was well established in our college hospitals.

The medical profession needs more autopsy studies but can only get them by increasing its own interest in the problem and helping to educate the public. A well worded statement along this line from our State Medical Society might help.

NUTRITION AND HEALTH AMONG SCHOOL CHILDREN.*

By W. P. JACKSON, M. D., Roanoke, Va.

This, though a much discussed question of the day, still deserves, I believe, enough thought to be considered for a few moments by us. Historically, for want of time, we shall mention only one or two steps in the development of child health programs.

In 1870, through the enforced school attendance act, England brought together so many emaciated and sickly children who would otherwise have remained hidden in the slums that there was immediately felt the necessity for some plan to correct those conditions. In 1899, through conscription for the Boer War, England again had her attention called forcefully to the large number of physically unfit young

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men. In the World War, America found 47 per cent of her recruits defective, and 21 per cent were rejected as unfit for service, while 26.5 per thousand were rejected because of underweight. According to the Government standards of examination, it is claimed by the Department of Interior that, if our present knowledge could be put into practice, the percentage of defectives reaching military age would be reduced by 50 per cent. For the school year ending June 1, 1927, about 16 per cent of children in the cities of Virginia were underweight and 21 per cent of children in the counties were underweight, 10 per cent or more. This, however, is a reversal of the usual condition which shows a greater proportion of underweights in the cities. Nevertheless, the general average is approximately that of the country at large. In June, 1927, according to the report of the Eighth Annual Physical Inspection of School Children for Virginia, there were only 30 per cent without defects. On June 1, 1928, the percentage without defects was 27 and the increase in the number inspected was 30,269. In 1927 there were 68,916 corrections, and in 1928 there were 80,498 corrections.

Education has been defined as meaning, first, health, maintaining of health and keeping well; second, practical efficiency, using the tools and conventions of civilized life and the technique of a vocation; third, citizenship, cooperation in the regulative processes of social control and civic and social enterprises; fourth, recreation, using leisure time for enjoyment and enrichment of the higher life. Health, we see, then, from this definition stands first. We all know that where great Commonwealths are concerned, progress, such as the development of an active, efficient, well executed program of putting into effect well proven knowledge, is very slow. For example, we say our country is at least 20 years behind in carrying out the very principles of health that we all know are proven beyond question and should be operative today.

Various plans have been tried and with varying success. That adopted by Cleveland, Ohio, is considered especially good, being a result of actual experience as they have worked it out there. In the foreword of the Health Program for a Junior High School, they call attention, first, that health is now commonly listed as the first of the objectives of general education. They remind us also of the great waste of our time in economic and social loss due to preventable illness and early death. They say "There is no doubt concerning the value of health promotion and disease prevention and as a result life expectancy has been increased 30 per cent in the last century. The gains already made have been largely through sanitary engineering and improved medical treatment of disease. The main hope in the futue rests upon better education of the individuals in the care of their own health and of the Commonwealth." As they express it, "One's health is affected not by what one knows but by what one does. The new education concerns itself not only with knowledge and skill but directs attention to the formation of habits, attitudes, and traits of character likely to control action in ways both useful to the individual and to society." In the nine objectives of theirs for a health program, there are three which I want to mention in connection with the thought which I wish to convey in these few moments: First, to develop or maintain specific health habits; second, to develop health knowledge; and, third, to develop the proper attitude toward health, health practices, and life situations. No plan in health education is going to be successful without the hearty cooperation of those taking part in it.

All apparently are in accord in feeling strongly that every child should have a thorough health examination by a competent physician, at least at the beginning of his school career, and repeated later at varying intervals of time. Such an examination is expected to be a thorough one, not only for the sake of finding defects when present but very largely to give that child and that child's mother, who should be present at the examination, an impression as to the importance of the procedure. Some communities employ full time physicians who are especially interested in that type of preventive medicine. Others employ part time physicians, and still others depend upon the family physicians. Advantages and objections can be offered to all three. For the first one, such salaried appointments are not commensurate with the value of the man. That condition should not be, but it is. Again, those patients under such a system will be to a large extent taken out of the hands of the rightful physicians, thus a step toward State medicine. To the second plan, the objection may be raised that the part time physicians are, as a rule, not

interested in this work. As a result, rapid, superficial inspections are made rather than thorough health examinations, and thus in a great measure is lost the opportunity to instil those very principles of health education as mentioned a few moments ago. The objection to the family physician has been raised that well qualified physicians may examine large numbers of children and find very few defects. For example, Phair reports that in Ontario, in the sections that depended on the family physicians, the percentage of defects found was very low and some physicians would examine as many as 40 children without finding a defect and hundreds were examined and only 0.2 per cent marked as being definitely below average nutrition.

Virginia's plan is to have these examinations made by the family physicians, and theoretically that plan is sound, if we are qualified to make the examinations. It remains for us to make it a success or failure. It gives us the opportunity to bind more closely than ever that sacred tie of family physician and patient. They do not call on us to make these examinations gratis; therefore, it is not a question of putting more charitable burdens on the already over-loaded. It is true that some will appear who are carried on our charity list but, to offset that, those who are able to pay and need further medical attention are expected to return to the family physician while he gets them into the proper physical condition for economic use of opportunities offered in the educational system.

It is evident that here we have a great opportunity. It is true that the school may offer, and very profitably, courses in nutrition, and as long as we have the high degree of malnutrition that now exists in the country, I want to endorse such courses as strongly as possible. But is not the presence of this high degree of malnutrition in the country largely a question for the family physician to meet? A survey by the Department of Interior reports that 90 per cent of the school children in this country, according to the condition of their teeth, had at some time in their career been badly fed, even though they at the time of examination may have been well nourished. Immediately, we see, then, that the fundamentals of nutrition must be applied to that child long before he has access to courses in nutrition. Yet, when we are brought in contact with these under-nourished children, we still have a great opportunity to practice preventive medicine. To illustrate, let us take up the problem of malnutrition.

Last year, with the assistance of the one school nurse in the city of Roanoke, we had 18 children of the most seriously under-weight she could find brought to the office for a study, especially of their health habits. Chief among those health habits were the consumption of a liberal supply of candy and sweets between meals, starchy foods in abundance, coffee, almost no milk, eggs very sparingly, with very little fruit or green vegetables, and no mid day rest period. They were the typical emaciated, anemic, drooped, tired looking, highly nervous children, as seen among such a group. Some of them had considerable trouble with discipline in school, for which they were kept in after school hours during the little remaining time of daylight left for them. Some of the parents came with the children and those whose parents came usually gave the best results. We had a few defects corrected where we could get them corrected, but our main emphasis lay simply on trying to get those children, age average 11 years, to adopt good health habits. We had considerable difficulty in getting proper cooperation from several of them, especially those whose parents we never saw, but others tried hard to carry out our simple rules as laid down, which may be expressed in a few words, namely, the daily liberal consumption of protective foods, fruits, leafy vegetables and milk, take a mid-day rest period with plenty of sleep at night and as much sunshine as they could get in, and good health habits in general. Over an average of 13 weeks per child, they gained 1½ times the normal gain for that period. This was a group which was considerably behind the average. Some naturally cooperated more and gained more. The greatest gain was 15¼ lbs. over a period of 16 weeks. This was a very feeble effort and was done merely to see for ourselves the possibility of an extensive program of that sort and to interest others in the subject. One who puts a little study into it and gets a glimpse of its possibilities cannot but be impressed with the contrast of the type I just described with the fresh, bright, happy, rosy cheeked youth, who comes in, weighs himself or herself, and sees the gain and gladly tells how much better he or she feels. The school

work is no longer so hard and the teacher is not so cross with them.

The nutrition worker in the school who sees these under-weight children and gets interested in them also has a wonderful opportunity. One of the local teachers, Miss Nancy Dixon, who for about two years has been much interested in this work, has really performed an excellent piece of work. She adopted the same method in general but was able to work more intensively with them by having them in classes in hygiene and in nutrition. In one group there were 109 pupils, 10 per cent or more under-weight. In three months those children gained on an average of 2-2/3 lbs. per month. The normal for that time and age is 12 oz. a month. Among another group of 98 pupils, 10 per cent or more under-weight, 41 were brought up to normal in three months. Fifty-two girls gained on the average of 1-2/3 lbs. a month and forty-two boys gained on an average of 2-1/3 lbs. a month. Among 245 pupils in the spring term of 1928, she increased the "Five Pointers" from 54 to 102, largely by bringing them up to their normal weight. These are mentioned to show what can be done in a school, but, as I see it, our job is to prevent as nearly as we can that high percentage of under-weights reaching the school in such condition. When it comes to a final analysis, what form of education for these children can be more valuable to them than to teach them and their mothers to take proper care of them, help them to preserve their health and make useful citizens of them? As stated elsewhere, our State proposes that the family physicians examine these children, and it expects those physicians to be paid for their services. If we do not meet this situation, then the State is left with the obligation and duty to employ physicians to properly take care of the work. I sometimes wonder if we realize how hard the State Board of Health tries in every way possible to get these people to consult us as their family physicians.

The expenses for the conduct of such a program must naturally be considered. The analysis of money expenditures for medical work for school children and other conservation of child life, as obtained by the Department of Commerce in 1925, shows that the cities of 30,000 and over in Virginia spent $.15 per capita. A few other reports taken at random for comparison show that Connecticut spent $.34; Iowa, $.18; Michigan, $.32 and North Carolina, $.22. Among the cities of Virginia, Richmond was at the top with $.20 and Roanoke at the bottom with $.06. Winston-Salem, N. C., spent $.36. We can not argue that we are not financially able to spend more when we compare ourselves with others. The per capita wealth for Virginia was, according to the Estimated National Wealth in 1922, by the Department of Commerce, $2,050, and, among the group just chosen, Connecticut, $3,614; Iowa, $4,274; Michigan, $2,989, and North Carolina, $1,703. There is no argument against the value of such expenditures. This has been proven beyond a doubt. The Metropolitan Life Insurance Company, by expending $60,000 for medical examinations of 6,000 people within six years, saved through premiums for people whose lives were extended $120,000, a 100 per cent investment for themselves to say nothing of the benefits received by those examined from the education offered by such examinations. In 1921, 87,000 Chicago school children failed to pass examinations because of loss of time, 80 per cent of which was due to tooth trouble, a preventable condition. The cost of repeating was estimated at $1,100,000.

In answer to the question to the State Department of Health: "How many nurses would you employ additional if you had the means?", they replied: "Sixty." They say there are still 48 counties with no nurses. The other twelve are needed as additional nurses. A fleeting glance of the work that these nurses do is sufficient to convince any one as to their value. Last year these nurses held 300 health conferences. One thousand six hundred mothers were instructed in prenatal care. Over 1,400 girls were instructed in care of infants and children. Over 76,000 immunizations were done with the assistance of these nurses. One hundred and eighteen thousand, five hundred and seventy-six home visits were made for instructive health education. The money needed for this enlarged program is $35,000. That amount, divided by the population of Virginia, requires a per capita tax of $.015. Certainly we can stand that, particularly if we consider from Dublin's calculations that every person thus saved and reared to 18 years, if the peak of his earning capacity is only $2,500 a year, his economic value is $28,645 at that age.

The object of this discussion, which covers such a large and important field and so superficially in these brief moments, is that we may,

first, in seeing its importance, try to impress the public as to the value of a healthy well nourished child; second, acquaint our legislators with the great wisdom of appropriate expenditures for this service to children of both pre-school and school ages; third, use our utmost efforts in the handling of these little patients to prevent such a large per cent of underweights and defects; fourth, cooperate to the fullest extent with the State Health Department in improving the health and physical fitness of our future citizens.

BIBLIOGRAPHY.

1. Wood and Rowell: Health Supervision and Medical Inspection of Schools. W. B. Saunders Co., Philadelphia.
2. Phair, John T.: The School Child. *A. J. P. H.*, Vol. 17, No. 4, 330-334, April, 1927.
3. Health Program of Junior High School Board of Education, Cleveland, Ohio, 1927.
4. Brydon, Mary E., State Board of Health, Richmond, Va. Personal Communication.
5. Statistical Bulletin, Metropolitan Life Ins. Co.: The Value of a Man. August, 1926, Vol. VII, No. 8.
6. Weekly Bulletin: Dept. of Health, Chicago, Ill., June 12, 1924.
7. Financial Statistics of Cities Having a Population of over 30,000 in 1925. U. S. Government Printing Office, Washington, D. C.
8. Estimated National Wealth, Public Debt and Taxation, 1922. Supt. of Documents, Government Printing Office, Washington, D. C.
9. United States Department of the Interior, Bureau of Education, Washington, D. C. Response to Inquiry.

515 *Mountain Trust Building.*

HIPPOCRATES THE MODERN PHYSICIAN.*

By ROY K. FLANNAGAN, M. D., Richmond, Va.

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THE MODERN SPIRIT.

There is a confusion of tongues in this age, and doubts are expressed about every phase of science, philosophy, religion, ethics and history, and every postulate and belief that for centuries have gone unchallenged are searchingly examined by an incredulous, enquiring, irreverent generation. The medical profession whose history stretches back through the dim vistas of an honorable antiquity and whose official spokesmen have never wavered in their adherence to the essential principles inculcated by its revered father and founder, Hippocrates, has not remained untouched by this modern questioning spirit. We should not cavil at this, for a thing is not good just because it is old, and tradition has encircled it with a halo, for it is often true that the object honored because of its age is but a corrupted substitute for the thing that it purported to be. Things well grounded and proven though ancient should, of course, be cherished, but the unscientific, the out-worn and ill-adapted should with little ceremony be cast aside.

It is well, therefore, that we as individuals and as an organized profession occasionally examine ourselves, our history, our principles and our practices to see if a critical inspection may not show a straying from first principles and whether or not certain interpretations and time-honored practices growing out of them, and which have been thought all but immutable, do not require revamping.

When changes are desirable or necessary in any department of human endeavor, adjustments should be effected if possible, from within, for otherwise there is always danger of an upheaval and revolutionary changes, perhaps for the worse, by influences operating both from within and from without.

OUR DANGERS.

With many evidences of a tendency toward a break-down of standards within the profession at large, and with many blatant enemies without having no regard for these standards, we may be sure that if we within the charmed circle of the ethical fraternity do not examine carefully our vulnerable points, readjust our thinking where necessary, and our actions to accord therewith, others less wise, less socially-minded and more mercenary, with no regard for precedent or principle by very force of numbers may take charge. In that event we can then look with assurance for a tearing down of much of the sacred structure which honor, honest devotion to science and regard for human welfare have built up through the centuries. We are to be congratulated that there appears to be little danger of such a thing happening soon to us in Virginia, but signs here and there of ethical disintegration are not wanting. We need, therefore, to be on the alert lest a self-satisfied inaction put us in the hands of the enemy.

Mindful of these things, it has seemed to me to be worthwhile to hark back to the beginning of medical history and clarify, if possible, the meaning of some of the record so

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far as that record may apply to present-day conditions, and see if the father of medicine may not have a lesson or two for us in this connection.

Ancient Medicine.

The great Hippocrates whose works give us our oldest medical record gave in that record the chart by which we ostensibly steer our ethical course today, i. e., "The Law of Medicine and the Hippocratic Oath." These documents will repay a much more careful study of their principles than is usually given.

In reviewing the record it is startling to note how history repeats itself, and how vividly "modern" this great prophet of our faith was in his point of view. The strictures he makes on some of his confreres and the implications of many of his observations are most pertinent and searching. Severe as they are at times upon some of us, it will perhaps do our souls good to examine them and, where they are applicable to any one of us, take them to heart.

Quotations.

In "The Law" Hippocrates characterized the "Art of Medicine" during his time thus: "Medicine is of all arts the most noble, but owing to the ignorance of many who practice it, and of those who inconsiderately form a judgment from them, it is at present behind the other arts. There is apparently no punishment connected with the practice of medicine, but disgrace, and disgrace does not hurt those who are familiar with it."

In the first "Aphorisim" he states that "Life is short and the Art long, the occasion fleeting, experience fallacious and judgment difficult. The physician must not only be prepared to do what is right himself but also to make the patient, the attendants and the environment cooperate."

In his treatise on "Ancient Medicine" he deplores the tendency of medical spokesmen of his time to limit the scope of his great art within the narrow compass of some empty hypothesis. He observed that there were both good and bad practitioners and operators, and, as in all other arts, in medicine there were those who differed greatly in dexterity and in knowledge and consequently he did not think that the Art "stood in need of an empty hypothesis like those subjects that were occult or dubious." Truths of medicine, he said, were the result of "many and elegant discoveries" covering a long period of time and were still in the process of being discovered and applied. In his view, if a practitioner possessed a proper ability and a knowledge of the discoveries previously made he should proceed on the basis of this knowledge to prosecute his investigations.

"It appears to me," he said, "that whoever treats of this Art should treat of things which are familiar to the common people. Illiterate persons cannot easily find out for themselves, but it still is easy for them to understand these things when discovered and expounded by others. But whoever does not reach the capacity of the illiterate common folk and make them listen to him misses his mark." In his treatise on "Air, Water and Places," Hippocrates says that the practitioner of medicine must investigate and will thereby know by the seasonal distribution and by his investigations where and what epidemic disease will be prevalent and "being acquainted with each particular he must succeed in the preservation of health and in the practice of his art."

Analysis.

Let us analyze and paraphrase what Hippocrates says in these illuminating extracts. There are ten observations here that I would have you note:

1. That the art of medicine is the noblest of all arts.

2. That ignorance in the practitioner is disloyalty to the profession and to the public.

3. That though the best doctor may be fallible, he can and must do right himself and make his patient, the attendants and the environment cooperate with him in it.

4. The evil tendency of doctors to get in a rut and stay there, and the even worse tendency of some of them to be mysterious about question of diagnosis and cure.

5. The fact that the truths of medicine are the product of painstaking discoveries through a long period of time, and that, however, ancient some of these truths, medicine is yet a growing art.

6. That the possession of knowledge and ability obligates a physician to investigate and to extend the boundaries of knowledge.

7. That medical knowledge should be made popular knowledge, and the uninformed pub-

lic may easily be made to understand the essentials of this knowledge.

8. That if the medical man cannot get this message across to common folk he, to that extent, fails in his mission.

9. That it is a part of the medical practitioner's duty to interest himself in and acquaint himself as to the prevalence and distribution of epidemic disease in his neighborhood.

10. Medicine consists of two divisions, the preservation of health and the cure of disease, and that true medical success follows as the proper sequence of these two is observed.

History Repeats Itself.

It will be seen from this outline that before the days of recorded medical knowledge (for to Hippocrates medicine was an ancient art) those upon whom the people relied for cure of their manifold ailments and accidents exhibited many of the characteristics found among those professing to practice medicine today. There was the high type physician, who recognized the sacred character of his calling, but there were also many ignoramuses, pathists, cultists, and quacks essaying to practice medicine. There were both skillful and unskillful doctors in the recognized profession as well as those who were careless of their reputations. Perceiving these things, he, as a conscientious exponent of a noble art, set forth in his record certain tendencies he considered evil for them, and certain observations which he manifestly hoped would be a guide to future medical men.

Noblesse Oblige.

The first observation noted is that "The art of medicine is the noblest of all arts." Is it not in order for us to remind ourselves continually that a noble profession demands of its votaries nobility in word and deed? To the true physician disgrace is the worst thing that can happen to him. To the quack and the charlatan the reprobation of honorable informed men attends them always, and they thrive on it. Their stock in trade is misinformation and villification. The doctor who descends to the use of such material in relation to brother practitioners casts aside the most essential elements of nobility, i. e.: truth and consideration for others. Far too many physicians of character and worth are at variance with other estimable men in their profession. Close examination by them of the grounds of difference between them will in many instances clear the atmosphere entirely. The doctor owes it to himself and to his profession to live at peace if possible with his brother practitioners.

The Stigma of Ignorance.

The second point noted is—that ignorance of the art of medicine constitutes disloyalty to it. Hippocrates is very clear on this point. The public does not know and, therefore, forms unconsidered judgments from the ignorant and vicious. The profession is often judged by the noise and activity of the loud-mouthed ignoramus calling himself "doctor," and is discredited in the eyes of the undiscriminating. People of this undiscriminating type are numerous and with all their faults they are worth saving. Loyalty to his noble art, therefore, demands that the doctor should know his Art as thoroughly as possible, but refrain from discussing or expressing opinions on newer phases of medicine until he shall have informed himself, for what a man does not understand (and the doctor is no exception) he is prone to criticise, and ill-advised criticism often works untold harm. In this day it is no reflection upon a physician not to know all about the newer discoveries of science. To claim such knowledge is to show overweening conceit. He should, however, utilize every avenue open, and every opportunity available to keep abreast with medical progress.

In Hippocrates' time, because practitioners of medicine frequently talked too much and not according to knowledge, the Art lagged behind all other arts. Studiousness, reserve and gentlemanly consideration for others marked the true physician then as now.

Medical Cooperation.

In the third paragraph in our list of quotations Hippocrates states the proposition, that Life is short and the Art long. The occasion, however, he observes is fleeting. Therefore, what is to be done must be done quickly. Experience he intimates cannot always be relied upon, and correct judgment is often difficult. The physician must, as the old sage says, be right himself and then require that the patient, the attendants and the environment cooperate. Not only is this observation good medical practice according to all accepted standards, but

good public health and social practice as well. To fail to appreciate any one item in this summary is to reveal oneself as a loose thinker, and not to practice the last admonition is to put oneself outside the pale of modern medicine.

To make the patient and the attendants cooperate is generally strictly observed, but to make the environment cooperate is often classed by otherwise good doctors as an incidental matter that may be neglected with impunity. It is most interesting and illuminating that such an ancient and honorable authority as Hippocrates thought otherwise.

Details.

In the case of tuberculosis, the environment must cooperate. Sputum cups, sterilized utensils and dishes, and sleeping porches are as much a part of competent practice as good food, nursing, care and obedience to orders. In the practice on malaria, the environment must cooperate. Adequate screening is absolutely essential, and mosquito breeding places nearby must be searched out and treated as well as the patient.

In typhoid fever and dysentery, treatment insuring cooperation of the environment is likewise the doctor's particular business. Attention to excreta disposal inside and outside the home, seeing that the sick-room is well screened, and insuring a safe water supply is as much a duty of the doctor as a correct feeding schedule and nursing routine. In other words if an insanitary privy and an open well are the only methods of waste disposal and of water supply on the premises while the doctor is in attendance on the case, a fatal break is left in the technique of proper management. If the doctor cannot make the attendants cooperate and carry out his directions as to environment as well as to nursing and medicine, he has in the Hippocratic as well as in the modern sense registered a failure.

Narrow Gauge Doctors.

The fourth observation concerns the tendency of a considerable number of doctors to narrow the scope of "The Art of Medicine," and of others to make a mystery of it. This has a decided application to those of us who have not grown with the growth and expansion of our live and rapidly growing profession. The practice of medicine while still an art is now deeply grounded in science, and the static doctor who ignores the proven advances in medicine renders himself an object of pity to the informed. There are many lovable and reasonably financially successful doctors in this group, but it cannot be claimed for them that they are living up to the ideal of Hippocrates.

The "occult and dubious" was also to be condemned as having no place in medical procedure. For a practitioner to make a mystery of a simply explainable medical fact placed him in the class of "dubious" doctors, who are rightly looked upon with suspicion by all who detest the methods of the charlatan.

The Spirit of Research.

In the fifth point listed, Hippocrates acknowledges the debt to those discoverers of medical truths who came before him, and by inference he pleads for a clearer historical perspective without which no doctor can come to a full appreciation of the glories of "The Art." In that early day he apprehended the truth that medicine was a growing, expanding art, with human well-being for its object, and with no recognized limitations as to theory, and, except in honor and honesty, no limitations as to the methods used to achieve it.

This being clearly understood furnishes a fitting preface to point six, which has generally been thought to be a fairly modern conception, namely: the social point of view. Here Hippocrates charges all who possess ability and knowledge with the sacred obligation to extend the boundaries of knowledge, advancing not empirically, but always moving step by step from the known to the unknown. It is seen that here the "modern" spirit of research was born. Can we doctors, the legatees, after twenty-five hundred years of the principles outlined by a great medical seer, fail to appropriate his wisdom? I think that we, with humility, may sit at his feet for furthur instruction.

Social Responsibility.

Point seven enunciates an incontestible social principle, namely: That medical knowledge should be made popular knowledge, and Hippocrates adds as a corollary the less well recognized truth, that the general public may be made to easily understand the essentials of this knowledge. He knew, as we know even more fully than he, that this knowledge, of which

we are the only custodians, is of supreme importance to all men. "Illiterate persons cannot easily find out for themselves" these important things. Have not we as a profession wandered rather far away from this idea so charged with common sense and common humanity? Have we not rather limited our liberality of ideas and discoveries within the narrow compass of our own fraternity? And do we not now frown upon any kind of general publicity in relation to medical facts? I know some of you will at this point be inclined to remind me that in the immortal oath of Hippocrates occurs the admonition that this "Art" should be taught to none but the especially chosen. A second thought, however, will show that there is no conflict here. Virtually all of our medical troubles have resulted from half-baked teaching to half-baked pupils, but it is one thing to make an M. D. and quite another thing to make a healthy citizenship. The latter is the sacred duty of the medical profession. The first *now* belongs to the Medical College. Our profession is committed to the abolition of disease and to relief of all morbid physical conditions from which mankind suffers. This is an impossible task if the physician, the only competent source of medical information, withholds from the general public the information or the opportunity to acquire the information needed to forestall the ills from which they as individuals suffer.

It may offend the dignity of some to be told that the general public may be easily made to understand the essentials of medical truth, but Hippocrates found it possible in regard to the "illiterate vulgar," as he calls them, of his time. Surely it is possible now, when practically every one can read and write.

Organized Action Needed.

The eighth point, separated from the previous one simply for emphasis, is, that: If the doctor cannot get his message across to people of ordinary intelligence he is a failure, or as Hippocrates phrases it, "Whoever does not reach the capacity of the illiterate common folk and make them listen to him misses his mark." It would appear that if we are to catch up with Hippocrates the profession must, in an organized way, adopt a policy of educating the public in regard to important medical facts. There is no doubt but that this may be done without over-instructing the public or in any sense encouraging them to practice medicine.

A step in this direction was taken by this Society two years ago when it adopted the report of the committee on "public health and education." So far as I know nothing definite has been done from headquarters to develop the idea then advanced and endorsed. I do not know that headquarters is equipped to do anything. I submit, however, that if a certain procedure is desirable for a local society to do, as advised by the resolution referred to, leadership may properly be expected from the parent society.

The resolution referred to is as follows:

"Whereas, many magazines and periodicals as well as advertising columns of both the religious and secular press are filled with misleading statements concerning the ailments of human kind and alleged means of cure, and,

"Whereas, the body of science the regular physician represents makes him custodian of knowledge in disproof of much of this dangerous and purely commercial propaganda, and since such knowledge should be available in greater degree to the public than at present; therefore, be it

"Resolved. That the Medical Society of Virginia hereby urges upon each affiliated society the advisability of appointing a standing committee on public information composed of carefully chosen members, who in simple langauge, in the name of the Society will furnish, from time to time, to the local press medical and public health information of an authoritative character."

Self-Protective Procedure.

We continue to educate ourselves, at least that portion of us who take medical journals and who attend our society meetings, but can we much longer shirk our responsibility to those whose only medical ideas are furnished by the cultist, the patent medicine vendor or the advertising "specialist?" Does not the vogue of these people bear a definite relation to our silence?

In a profession so deeply wedded to tradition as regards professional and social relationships as is ours, it is too much to expect that it will suddenly agree to get out of the grooves that honored predecessors have worn for it through the centuries, however ancient or modern the authority invoked in behalf of such a proce-

dure. The medical leadership in Virginia, however, is looking upward and forward, and I believe is beginning to see whither ultra-conservatism tends. This leadership should, I believe, be prepared to aid in devising ways and means to adapt medical knowledge to the understanding of the man in the street so that, fortified by facts, he will not be led astray by every plausible stranger that tries to sell him a pseudo-scientific gold brick. We are modernizing our ancient art, we are expanding our scientific knowledge and in remarkable ways extending the scope of medical usefulness. Let us "ancientize" our social practice by an adaptation of Hippocrates' suggestion and systematically as a State society furnish to the public in simple understandable terms the medical and health knowledge that is needed for its physical salvation.

Disease Control.

The ninth Hippocratic observation I would have you note well, is, that it is a part of the medical practitioner's duty to interest himself in, and acquaint himself as to, the prevalence and distribution of epidemic disease in his neighborhood. To quote, "He must proceed to investigate—and he cannot miss knowing—the diseases peculiar to his locality—in particular he can tell as the season advances what epidemic (communicable) diseases are to be expected." What, may I ask, can be the reason for Hippocrates calling attention to the duty of the doctor to discover what infections there are in his neighborhood? Is it for the doctor's benefit? Is it to enable him to increase his knowledge to the enhancement of his personal prestige and pocketbook? If you have caught the tone of every utterance quoted from this great man you know this is not true. The purpose behind the acquirement of this knowledge is, obviously, to arm the physician early so that the ravages of disease might be abated, particularly among the common folk, on whom Hippocrates, in anticipation of the attitude of an even greater teacher and physician in a neighboring province five hundred years later, had compassion. Hippocrates was physician to kings and emperors, but he did not neglect his civic and social duty.

Reports A Bounden Duty

In these days when the public has demanded and the State has created a Department of Public Health, a part of whose duty it is to investigate and to inform the proper authorities and the public of the presence and prevalence of communicable diseases as they appear, and to prevent their further spread, it cannot be assumed by the public or by public health authority that the doctors in any community attacked by such disease are ignorant of its presence. The doctor is required to suspect infectious disease at every turn, and under the law must report on suspicion. He has not, as is so often taken for granted, any discretion in the matter. He should not seek to exercise discretion. Though by reason of the indispensable quality of his service he may find a public lenient to his faults, to presume upon this attitude on the part of a friendly and unthinking public at the expense of community health is not the act of a good citizen. According to the Hippocratic standard the doctor sets the highest example of enlightened and disinterested citizenship.

Malpractice.

What shall we say of the natural custodian of community health who fails in this particular? When disease spreads because the attending physician is doubtful as to the serious nature of a case visited or is indifferent as to future consequences, and, therefore, he gives inadequate instructions as to its care, or takes no precautions against its possible spread, what justification can he claim? To himself, his patient and the public he stands convicted either of ignorance or of criminal carelessness, in other words malpractice. Is this too harsh a term? I assure you I am setting up no straw man to shoot at. Many doctors in this State are guilty of neglect in this particular, and well do all of us know it. Entirely too many practitioners fail to make prompt reports. Many cases of diphtheria, scarlet fever, typhoid fever, and even of smallpox come under the observation of physicians, and the knowledge reaches local and State Health Departments only after secondary cases have resulted. Then, too, the sight of many infants is placed in jeopardy because doctors all too frequently neglect to use the nitrate of silver drops in the eyes of infants at birth. At this point I cannot refrain from remarking that since one case of ophthalmia neonatorum in his practice will make the most careless doctor observe the law thereafter, why should any

doctor wait for this calamity to occur, as it must sooner or later do if the precaution is not taken?

The State Health Department being "on the inside" so to speak, appreciating to the full the great service the great body of the profession has rendered and is rendering to the public and to the cause of public health, has more often than not accepted excuses for flagrant neglect on the part of doctors that would not stand in any court. I am sure none of you think that a doctor should be excused from the extremely important civic and humanitarian duty of reporting infectious disease or be exempted from penalty for not doing so, when penalty is incurred. If, in the future, a less complacent attitude be adopted toward physicians who fail to suspect infectious diseases and report them promptly, and who fail to apply preventive measures to them; it will simply be belated justice overtaking peculiarly flagrant violators of a sacred medical principle.

Health Preservation First.

The tenth and concluding observation quoted from the writings of Hippocrates is, that the "Art of Medicine" consists primarily in the preservation of health, and secondarily the cure of disease.

While the prevention of disease as a specialized branch of the profession had to wait, as did many other specialties, many centuries for its scientific basis, it is now assuming in the public mind of enlightened communities the place of precedence Hippocrates gave it. A physician does not have to be a prophet to perceive that in the not distant future, through the more general dissemination of knowledge and of the activities of public health specialists, the "disease business" will become more and more restricted. "Prevention *is* better than cure" and, as prevention becomes more the rule and less and less the exception, the doctor, if he is to survive in security and comfort, and he must survive, will have to make adjustments to meet the changed conditions the new situation is bringing about. This will involve thought, open-minded discussion and perhaps reversal of some preconceptions. Certainly it will do no good to try and check the tide of preventive activity, even if such a course were not contrary to the most cherished tenets of our profession. The flood gates of that tide were opened by men whom we physicians most delight to honor, and the doctor will learn to swim or he must sink. The obvious thing, therefore, for the physician to do is to inform himself in regard to the well considered plans of the State Health Department for removing the causes of disease and premature death, and whole-heartedly enter into them.

Salvation for the Doctor.

There is a place in these plans that is not without prestige and profit for every honest physician in the Commonwealth. In a prize essay on "How the Family Doctor Can Increase His Usefulness and His Income," written during the past year by Dr. J. H. Hiden, of Accomac County, one of that group of physicians who have been hardest hit by the diminution of disease,—namely, the country physician—it is clearly set forth how a physician may cooperate with State and local health authority and practice preventive as well as curative medicine consistently and honorably, and yet not be prejudiced in practice or in pocketbook. What one physician can do and is doing is possible to all. To the contrary, no concession to counsels of reaction, however, sweeping will save the doctor who neglects to keep in touch with medical progress and who will not acquaint himself with the newer discoveries and methods in medical, surgical and preventive practice. The public that is able to pay, demands the best and, when the best is not available nearby, the telephone, the automobile and good roads (not to mention the possibilities of the airplane), will quickly procure it.

Medical progress and the newer method comprehend public health practice in ever-increasing measure; the ethical, the wise and the profitable course for physicians in their individual and in their organized capacities, then, in my judgment, would be to help establish or, if already established, to strengthen and develop for their communities the highest type of public health service possible.

The profession in such a locality will then be in position to set the pace for public health and guide its course to the end that the work of prevention not only will be the better done, but the doctor's legitimate claims to consideration by health authority will be placed beyond question or suspicion.

The Final Word.

In conclusion, let me say that if we wish advice as to how to be money-making doctors, we will have to look elsewhere than to Hippocrates for it. Nowhere in any part of his writings does he discuss the business side of "The Art." How to secure large fees or attract a clientele formed no part of his record. He apparently believed that devoted study, hard thinking, close observation, careful experimentation carefully recorded, and conscientious application of the knowledge gained to the needs of the people about him, would insure him a decent livelihood, and it is certain that he taught that the aim of every true physician should be to so practice "The Art" as "to live respected by all people in all times."

Does this outline of an ancient ideal constitute an impossible program for the twentieth century physician? We would, I am sure, all feel humiliated if we were forced to concede that Hippocrates' vision as to modern social demands was more vivid than our own. May the medical profession in Virginia never stray from the road which it has, on the whole, hitherto walked, and may it in the light of a clearer apprehension of the views of its ancient and honorable father and founder, Hippocrates, see the newer vistas of public usefulness opening before it, and advance in unbroken phalanx along the broadening highway leading thereto.

Reference is made to The Works of Hippocrates, translated by D. Francis Adams.

IT'S NOTHING BUT NERVES: FORGET IT.*

By R. L. RAIFORD, M. D., Franklin, Va.

Were it not for the fact that we continue to see in undiminishing numbers patients whose predominating symptoms are of a nervous nature, who have gone the rounds from clinic to clinic coming back with the professional assurance that "Its only a case of nerves—go home and forget it," there would be no excuse for this paper.

I recently heard a good man say, in discussing the acute abdomen, that he hoped to see the day when "Acute Indigestion" as a diagnosis would be outlawed by the profession. Unquestionably, many an acute abdominal condition has been allowed to become serious because of the mistaken idea that it was only an innocent digestive disturbance. Just as truly is it a fact that many a life has been allowed to become miserable and the patient a burden to himself and a bane to his friends because of the erroneous assumption that he or she is only nervous, hysterical or just putting on, when if a close, painstaking diagnostic survey were made, the real seat of the trouble could usually be located.

We still hear good men speak of nervous indigestion, nervous headaches and that nebulous blanket term neurasthenia, as wisely as if they were really talking about disease entities instead of merely symptoms. This same type of man will also discuss the various so-called functional types of insanity that may develop as a result of neglected treatment of such nervous cases with the same degree of assurance that he would use were he talking in terms of real disease nomenclature.

That neurasthenia and many other nervous manifestations are often erroneous terms that cover our ignorance of some form of real causative pathology in the system is becoming more and more apparent to some of the most forward looking thinkers of our profession. Nomenclature of diseases along this line, as well as along many others as given in even our modern text books, is often very misleading as to the real or primary pathology in question. One of my books on skin diseases mentions the existence of over fifty kinds of eczema. Now we know that eczema, when viewed from the standpoint of its cause, can be classed in two main groups—that which originates as a result of toxemia from without or from toxemia from within, plus a susceptible system.

In my experience, the same rule holds true in nervous diseases. I have yet to see the patient suffering from so-called functional nervous disorders, provided the habits, diet, and manner of living were not at fault, who did not have some internal source of toxemia as a basis for the continuance of the nervous symptoms.

A typical case in question will illustrate the point. Some years ago a very robust, healthy, married woman of thirty developed a typical case of nerves, accompanied by attacks of agonizing sick headaches. She had a brother in a mental hospital and this, together with her extreme nervous symptoms, made her friends fear for her mental stability. Many

*Read at the fifty-ninth annual meeting of the Medical Society of Virginia, in Danville, October 16-18, 1928.

forms of treatment by many doctors were given, including removal of ovaries, and appendix and catheterization of the ureters, with no improvement, and it became necessary to give morphine repeatedly to relieve her worst attacks. Finally, her husband, knowing that she had had trouble with her tonsils as a child and being impressed with tales he had heard of recoveries from various troubles by removal of tonsils, requested his doctor to have her tonsils removed with the hope of helping her. Fortunately he hit the right trail and recovery to normal with disappearace of all nervous symptoms and headaches was so prompt as to be almost unbelievable.

For several years she continued in excellent health until the summer of 1926 when the nervousness and headaches began to reappear. In spite of all treatment her symptoms steadily grew worse until hypodermics were again necessary to give relief. She was finally sent to one of the leading diagnosticians in the country who, after a long and exhaustive study of her case, assured her that she was a perfectly normal woman and sent her home telling her to stop all treatment and forget her nervousness.

Such assurance from so noted an authority pepped her up and for awhile she improved some, only to go down soon again with another unbearable headache accompanied by the same nervousness as before. It was then that it was decided to X-ray her teeth, though they appeared to be perfectly normal and every doctor and dentist who had seen her felt so sure they could not be a source of her trouble that such an examination had not suggested itself before. One infected molar was found. It was extracted and her symptoms have again cleared up like magic and she is now a normal healthy woman.

You may say this is an extreme case but I have seen many others just as outstanding as this one.

Experience and observation has taught me to be extremely cautious in telling a patient that there is nothing pathologically wrong with him. A few years ago one of the finest young men of my acquaintance who had been having a lot of indefinite nervous symptoms was assured after an exhaustive study by one of the best internists in the South that he was only over anxious about himself and to go home and forget it. Within a week he did forget it. We followed his remains to their last resting place—a sad climax to the history of a lovely character who died suddenly from a case of only nerves.

Please pardon me for saying that it takes no brains at all to say that your patient is suffering with a case of "nervousness." He is indeed already highly aware of that distressing fact before seeing you. Any tyro can wisely assure you that Mrs. So and So is a neurotic, hysterical nuisance, but it takes some gray matter to dig in and find what is causing this chain of symptoms.

The more I delve into the study of chronic diseases, the more thoroughly I am convinced that the prevalent ideas of their etiology and nomenclature and treatment are often at fault. I have grown to believe that in the average normal person there is usually some form of chronic infection back of the chronic symptoms we have so often looked on as primary diseases. Chronic nervousness of whatever nature is no exception to this rule.

Finally, let me say, that given a once normal person who has developed neurasthenia or any other chronic symptoms, if you will correct the diet and living habits, eliminate syphilis and all foci of infection, and do this thoroughly, you may, if you desire, discontinue all other forms of medical treatment and "forget it" if you please, with the full assurance that a very large percentage of your patients will become once again normal and healthy.

It may be a little unusual stand to take but it would seem better to admit that we are licked in an effort to figure out the real cause of the chronic symptoms in any given case than to hide behind the untenable screen of "It's Nothing but Nerves: Forget it."

TYPHOID REVER—PROPHYLAXIS AND DIETETIC TREATMENT.*

By THOMAS J. TUDOR, M. D., Norton, Va.

For a long time typhoid fever stood fourth, tuberculosis leading, pneumonia second, and cancer third in causes of deaths in the United States. In 1925, typhoid fever was 16th in the mortality list, with 8 deaths per 100,000. That year "flu" caused 3½ times as many deaths, hernia ¼ more, suicide 50 per cent more, puerperal sepsis 20 per cent more, appendicitis about twice as many, and diabetes just twice

*Read before the fifty-ninth annual meeting of the Medical Society of Virginia, at Danville, Va., October 16-18, 1928.

as many. Last year, one of the largest industrial insurance companies (Metropolitan) reported a mortality from typhoid fever of only 5 per 100,000 in their list of policyholders, but this Company distributes a great deal of health literature and there is some supervision of these risks.

Coming into Danville last summer, my mother asked me if I remembered the Danville fever, and I did recall it as a boy, in our country home 65 miles away, what dread we had of this disease with its fearful mortality, and in my early visits here we were afraid of the water and the milk.

It is a far cry from then to this day when the weak link in the sanitary chain is the country. However, after all we have been able to do, there is still what some writers have called (I hope, erroneously) "normal" or residual typhoid, and it is figured that the death rate from this should not exceed 5 per 100,000. It is comforting to know that the typhoid bacillus has no spore, that it is not difficult to destroy, and that, when dry, it will not survive as a rule more than a few hours, and, therefore, dust is not usually dangerous. Heat of 60 degrees C. for 20 minutes will kill the germs.

"The typhiod bacillus may live 12 days in crude sewage (Firth); 14 days in a septic tank (Pickard); 4 months in butter (Balley and Field); five days in home-made cheese (Heim); 12 days in pot cheese (Lemke); 39 days in ice-cream (Mitchell)."—Rosenau. Sour buttermilk will rarely sustain life of the germs longer than 24 hours.

We believe that the disease always enters through the mouth, and we now think of it as a blood infection, or bacteremia, rather than our former conception of it as a local infection of the intestinal tract. The bacilli leave the system chiefly through the feces and urine. sometimes appearing in the former before the fever, and in the latter from the second to the fourth week. Recently, I have confirmed early diagnoses by fecal examination, sometimes before the blood test was positive. Too, it is much easier to procure from children.

Water-borne typhoid fever is common and most dreaded, and, whereas typhoid fever has always been more prevalent in the South than in the North, both in this country and Europe, most of the great water-borne epidemics have occurred in Northern cities, and they nearly always occur during the winter, late fall, or early spring, when the water is cold.

Freezing does not kill the typhoid bacillus, but little natural ice from uncertain water supplies is now used, and water used by commercial ice plants is usually either boiled or distilled, but ice-cream may be very dangerous, as may all the dairy products, for typhoid germs thrive and multiply in most of them,—sweetmilk being the most dangerous, and sour buttermilk the least. However, in the cities pasteurization is a powerful safeguard.

Oysters, mussels, and shell-fish may be dangerous, and outbreaks have been traced to these when eaten raw. The same is true of raw vegetables, such as celery, lettuce, water cress, and radishes, especially when these have been fertilized with night soil. Commercial fruits, apples, peaches, etc., under modern methods of cultivation, are sprayed with powerful antiseptics to keep orchard pests under control, and these are washed off by the rains, and the fruits are gently picked by hand to avoid bruising, hence they are safe.

The house fly, which we tried to call the typhoid fly, is a menace wherever typhoid is present. This insect may on his hairy legs and body carry infection from a foul privy or an infected dish and deposit in a spotless dining-room on a tempting morsel of food two miles away.

Contact, not with the breath of the typhoid patient, but more remotely through soiled hands, remnants of food, infected thermometers, dishes, towels, or other fabrics, may account for many new cases. Sedgwick has said, "Flies, fingers, and food," and Chapin has said "Dirt, diarrhea, and dinner," and army and congested tenements and apartments, bedding and cast-off clothing have been responsible for many cases. Too many hospital attendants have typhoid fever, and this is because the medical conscience and technique with infections has not developed to the same degree that the surgical has.

Cleanliness, physical and biological, then, is the final word. How many times, even in the old days, have we seen in a scrupulously clean home one case of typhoid not followed by others? Clean food, water, person, and environment, early diagnosis, and until this can be made a provisional diagnosis of typhoid, with all the precautions against its spread, and a wholesome respect for the disease by the

physician and nurse, will help us to keep it down to the minimum. When the physician, after attending a case, washes his hands, then passes them through the disinfecting solution, and the people in the household see him let them dry, it has a wholesome effect upon them above words. Even those who are well should always, typhoid or no typhoid, wash their hands after defecation and before eating, and fingers and all unnecessary objects should be kept out of the mouth.

The source of infection should be located in every typhoid case, if possible. We should keep in touch with our convalescents until four consecutive weekly tests of urine and feces indicate the absence of typhoid bacilli, for it is believed, even in those that will not be carriers for a long time, that the bacilli may appear in the feces off and on for six months. We should tell the people this so that they will not relax in their precautions until the danger can reasonably be considered over.

This brings us to the perplexing problem of carriers. Albert believes that 25 per cent of these have never had typhoid clinically, and that 1 person in every 1,000 of our population is a chronic carrier. Women are carriers four times as often as men, and, since they are in the main our food handlers, the hazard is apparent. Any woman with symptoms of gall-bladder disease should be regarded with suspicion, as the chief nidus of the germs is usually the gall-bladder. Carriers are of both the fecal and urinary variety. The fecal are more dangerous, and both are irregular in the dissemination of the germs. We do not know what to do with carriers. However, they should be treated with hexamethylene acidulated, and they and their associates notified of the menace, and all warned to take typhoid precautions.

Side results in typhoid prevention are of value and are always apparent in the lowering of the incidence of those diseases, the spread of which is similar to that of typhoid. Standard text-book precautions in individual cases are omitted here, and no attempt has been made to cover the entire subject, but rather to discuss some of the high spots so that we may not forget eternal vigilance is the price of safety.

Preventive typhoid inoculations, especially since the brilliant results in the American Army during the World War, when, during 1917 and 1918, there were only 1,058 cases of typhoid with 158 deaths, is on a firm footing with the physicians and most of the people in this country. One case of typhoid usually, but not always, confers immunity for life, but inoculations should be repeated every three years and the triple vaccine should be used. All people exposed to infection, whether from typhoid, or from uncertain water or milk supply, or what not, should have this protection, which should extend to the aged,—for we have dispelled the myth that the aged rarely have typhoid. We believe in these inoculations implicitly, but we should never let them replace to the slightest extent standard typhoid precautions or our sanitary program.

Diet: Since observing in 1909 the results of liberal feeding in the patients of that brilliant scholar of the German School, Dr. Moses D. Hoge, of Richmond, I have practiced and, in season and out of season, advocated liberal feeding of typhoid patients. 3,000 calories a day are not too much for adults, and statistics show a lowering of mortality for such feeding,—that hemorrhage and perforation are less liable to occur, and we find a reduction in delirium, stupor, and tympanitis.

The food should be soft, nutritious, and largely of carbohydrates; one-third of the calories may consist of fats. Sugars in the form of syrups, honey, marmalades, jellies, and jams, and even a bit of good candy are permissible and enjoyed. Cream and butter supply the fats, and the breakfast foods, preferably those of rice, oats, or wheat; soft eggs, ice-cream once daily, and milk freely with the above make a variety to which may be added rice pudding, custard, gelatin, tapioca, chocolate, cocoa, green beans, baked or mashed Irish potatoes, and steam toasted bread.

The morale of the patients who eat is far above that of those who starve. It is not uncommon to have a typhoid case at the end of the attack who has not lost much weight. Those who survive a severe attack on a liquid diet are so weak, so emaciated, and so generally run down that they are a standing invitation to the development of other diseases, especially tuberculosis.

THAT GOLDEN ROD SLIP.

We are grateful to our members who responded to the request about the Golden Rod Slip, which was placed in the December journal. If those who have not paid for 1929 will look this up and send check to this office, we will appreciate it and it will save expense to the Society.

REVIEW OF ONE HUNDRED CASES OF PROSTATECTOMY WITH SPECIAL REFERENCE TO EARLY DIAGNOSIS.*

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and

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In the last few years the mortality following prostatectomy has been reduced to less than 5 per cent in the hands of experienced operators. This is due to the more universal recognition of the associated degenerative processes concerned in prostatic hypertrophy. Adenoma of the prostate is often but a part of the degenerative changes going on in men reaching the sixth decade in life A disarrangement of the renal as well as the cardio-vascu ar system is found in half of the cases examined. Smith found 50 per cent of his cases had disease of the myocardium. Willus reports degenerative changes in 42 per cent of a series of cases of prostatism studied at the Mayo Clinic. Hypertension was found in 36 per cent, with arterio-

Fig. 1.—Contrast cystogram showing a large diverticulum of the bladder associated with prostatic adenoma. Bladder is filled with air after injecting 5 per cent sodium iodide. Diverticula are found in 5 per cent of the cases and usually require resection.

sclerosis present in 42 per cent. These findings show that prostatic hypertrophy undoubtedly tends to increase the number of cases of cardio-renal disease in men reaching fifty-years of age.

Incidence

Approximately 40 to 50 per cent of the men reaching the age of fifty years have some degree of prostatic enlargement. This may be found by rectal palpation. Hunt found that half of the men reaching fifty years in a series of cases, that were given routine examinations at the Mayo Clinic, had some degree of prostatic enlargement. The report shows how relatively common this condition is, and that one should constantly be on the lookout to determine its presence in patients past middle life. Smith and Willius have called attention to the frequency with which cardio-renal breakdown accompanies prostatic hypertrophy, so that if we are to give our patients the best chance of completing the normal expectancy of life, they should be relieved of the back pressure before the heart reserve has broken down and the kidney function destroyed by back pressure.

Age of Patients

45 to 50	2 per cent
51 to 55	10 per cent
56 to 60	16 per cent
61 to 65	28 per cent
66 to 70	23 per cent
71 to 75	15 per cent
76 to 80	3 per cent
81 to 85	2 per cent
86 to 90	1 per cent

In this review of one hundred unselected cases of prostatectomy performed by us, it is felt that certain points should be emphasized, especially the pre-operative diagnosis and treatment. As Bugbee has said, the operation is but an incidence in the handling of a prostatic. The low mortality in this work has been favorably brought about by recognition of the value of pre- and post-operative treatment. This is due to the more universal recognition of the fact that all of these cases are potentially uremic as a result of urinary retention, not only of the urinary apparatus, but of the system as a whole. The use of the renal function and blood retention tests has brought about a new conception of the pre-operative management of the prostatic. This alone has caused a reduction in the mortality until now prostatectomy in experienced hands is a relatively safe procedure.

Classification

Benign adenoma of the prostate forms

*Read before the Hippocrates-Galen Medical Society, Washington, D. C., April 17, 1928.

the major portion of these obstructions and constitutes at least three-fourths of the cases seen. The remaining group is ordinarily classed as inflammatory in origin. Walthall has recently called attention to the benefit de-

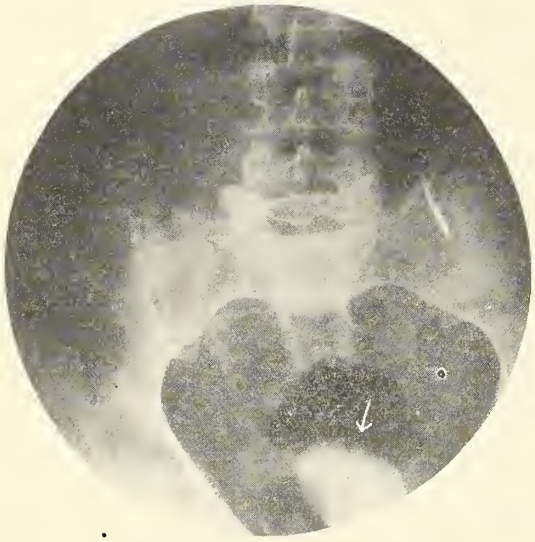


Fig. 2.—Large oval, vesical calculus found in a case in this series. This patient had a calculus, bilateral diverticula, together with enlargement of the prostate. Calculi are found in from 12 to 15 per cent of all cases of prostatic hypertrophy.

rived from palliative treatment in the inflammatory type of prostatism. Systematic massage, together with local heat, either diathermy or hot irrigations, often causes a marked reduction in the residual urine as well as in the subjective symptoms in the inflammatory type of case. The patient should be given the benefit of this conservative treatment in those cases in which the adenomatous growth is small. One should not place too much reliance on the rectal findings in prostatic hypertrophy, such as in the pedunculated type, with the principal growth at the expense of the urethral lumen. This type of obstruction often causes more symptoms of retention than does the large adenoma, which in its growth produces intravesical protusion but does not encroach on the lumen of the urethra. The cystoscope is of inestimable value in the diagnosis of this type of case but should be used only after the patient has been decompressed.

Malignant Complications

Statistics vary as to the incidence of carcinoma of the prostate but recent reports from the literature show an incidence of from 25 to 30 per cent of all prostates removed in which careful miscroscopic serial section was made. We recently had a series of seven consecutive cases in which the histological studies showed early malignancy after repeated sections were

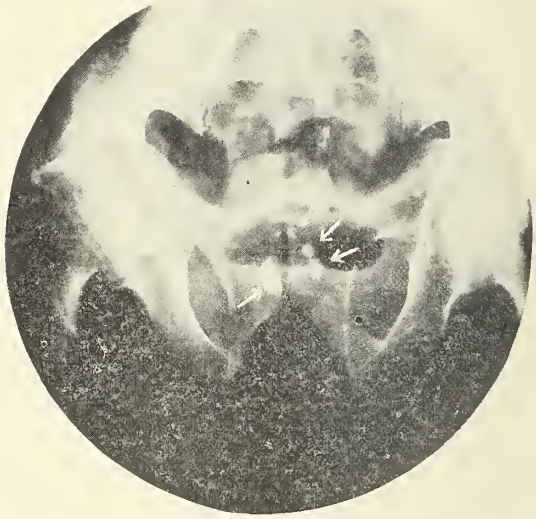


Fig. 3.—A plain X-ray showing prostatic calculi associated with some obstruction of urination but no enlargement of the prostate. These calculi sometimes require removal if obstruction is marked.

made. In none of these cases of malignancy were we able to detect the characteristic rectal findings which usually enables one to arrive at a corect pre-operative diagnosis. It is our opinion that many cases are classed as benign, whereas if a large number of sections were made one would frequently pick up an early carcinomatous lesion. Bumpus reported a series of cancer of the prostate in which 30 per cent were found to have invaded the adjacent bones, an additional 10 per cent had metastasized to the regional lymph glands when the patients were first seen. This makes approximately 40 per cent of carcinoma of the prostate in which a prostatectomy is futile. The malignant prostate with its rich lymphatic system is not unlike the cervix uteri in that metastasis is early, widespread, and is frequently seen so late that surgical intervention is futile. Watson advises the use of radium emanations in this condition. The capsules are imbedded throughout the prostate by means of a trocar inserted through the perineum. If the case is seen before metastasis has occurred, 10 per cent of these cases are apparently clinically cured. A supra-pubic cystotomy is of benefit where acute retention occurs and also enables one to place

radium in the prostate through the supra-pubic incision. Deep X-ray therapy has not been as effective as has radium.

Pre-Operative Care

In this review of one hundred cases of prostatectomy performed by us it is felt that certain points should be emphasized, especially the importance of diagnosis and treatment. In the early days of prostatic surgery, the mortality was as high as 50 per cent, due to lack of recognition of the fact that a patient with enlargement of the prostate is uremic, has a relative hypertension with marked embarrassment of the cardio-renal system. The principal danger in the handling of a prostatic is in the decompression period. Experience has taught us that if we can carry the patient through the period of decompression the actual enucleation of the gland is relatively safe.

Lesions

Prior to drainage, stablization of the cardio-renal system has not occurred and the patient usually has elevation of the blood pressure. Following drainage of the bladder, the pressure often drops from twenty to fifty mm. of mercury. This causes a lowering of the intrarenal pressure which is followed by serious

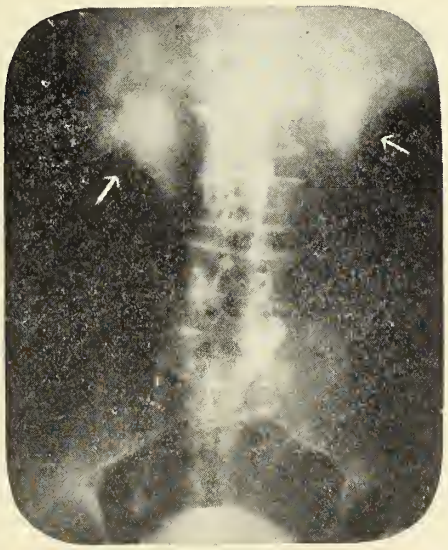


Fig. 4.—Pyelo-uretero-cystogram showing pyelonephrosis of both kidneys as result of back pressure from obstruction of the lower urinary tract.

renal impairment. In this study there were three deaths occurring during decompression whereas there were but three deaths from prostatectomy. Supra-pubic cystostomy without preliminary catheterization carries a definite mortality of from 6 to 10 per cent.

Hunt has pointed out that renal insufficiency, cardio-vascular disease and pulmonary lesions are responsible for 50 per cent of the deaths following prostatectomy. This shows that treatment preliminary to operation is imperative. In the early days of prostatic surgery, the mortality was very high due to failure to recognize the degree of cardio-renal embarrassment present. The two-step prostatectomy came into vogue as an answer to this particular problem and carried many old men through the dangerous preliminary period. The two-step prostatectomy, we think, should be divided into a three-step procedure if acute retention is present, the first being decompression with a urethral catheter. The work of Van Zwalenburg, Cunningham and others has shown that supra-pubic cystostomy in the presence of acute retention has a definite mortality. Bumpus says that if the blood urea is over one hundred milligrams per c.c. it is very dangerous to subject the patient to the additonal renal load that a supra-pubic cystotomy implies. In our own work we have seen numerous cases with acute retention of urine, resulting in disorientation and cardio-respiratory embarrassment. By utilizing an indwelling catheter and gradual decompression, we have been able to carry them through the operation successfully. When a patient comes to us seeking medical advice, complaining of nocturnal frequency, difficulty in starting and stopping

Fig. 5.—Photograph of large stone removed in connection with one of the cases in this report.

the urinary stream, together with incomplete emptying of the bladder, our attention should be immediately focused on the prostate as a possible cause of such symptoms.

In the inflammatory type of prostate the first three symptoms are usually present and, as a rule, surgical measures are not as beneficial as is conservative treatment, later, if necessary, followed by the punch operation or excision of the obstruction with the radio knife. In the presence of sixty c.c. or more of residual urine together with difficulty in emptying the bladder and nocturia, one should not hesitate to advise early operative interference. Some prostatectomists may disagree with us on this point, preferring to wait until the issue is forced. This delay frequently causes a depletion of his cardio-vascular reserve. He becomes more susceptible to intercurrent diseases as well as greatly increasing the probability of the prostate becoming cancerous. Occasionally, as Walthall has pointed out, in the presence of an acute infection a mild degree of prostatism will subside with massage and hot irrigations. This is the exception, however, and once retention occurs over a considerable length of time with difficulty in passing the urine, one should not hesitate to advise extirpation of the obstruction. We have frequently seen patients who had been treated elsewhere and dismissed as cured only to have a recurrence of their former symptoms as soon as their former habits were resumed. The earlier the patient with a definite obstruction is operated on, the more likely a permanent cure will be obtained. It is a commonly accepted fact that there is a time in all

Fig. 6.—Photograph of a benign adenoma enucleated *en masse*. Black marker indicates the position of the urethra.

cases of carcinoma when a patient is amenable to surgical interference, i. e., in the pre-cancerous stage. If we are to give our patients the best advice, we should impress upon them the frequency with which malignancy occurs and the necessity of early surgical treatment. By instituting palliative treatment in this type of case we subject that patient to the added risk of a terminal uremia which precludes the possibility of permanently relieving the obstruction. As a result of obstruction at the bladder neck, back pressure on the kidney soon manifests itself by a low grade urosepsis, the severity of which depends on the amount of obstruction and the length of time it has been present. If this back pressure is allowed to exist over a considerable period of time the kidneys, as well as the cardiac system will become so badly deranged that the possibility of a cure is greatly lessened. When a man past fifty years presents himself with the above enumerated symptoms, the history, with a careful urological examination including rectal palpation, will usually reveal the cause of the urinary disorder. One of the most frequent complaints is loss of appetite and sleep. This gradually undermines the patient's general health and creates a vicious circle. A low grade ileus is frequently encountered and may be mistaken for an intestinal disorder when the real cause is a mild urosepsis. The blood pressure will be found to be much elevated as a result of the back pressure throughout the renal system. The degree of hypertension is a rough index as to the amount of back pressure on the kidneys. Following drainage of the bladder, the blood pressure will quickly drop as much as one hundred mm. of mercury, finally becoming stabilized when the kidneys have reached their maximum output. The amount of residual urine can be quickly and easily estimated by catheterizing the patient following urination. Statistics show that the average expectancy of life following the institution of catheter drainage is less than five years, so that the patient should be warned that removal of the obstruction is the only method offering a permanent cure.

Value of Cystoscopy and X-Ray

Cystoscopy is of great value in estimating the amount of prostatic enlargement into the bladder, though we do not advocate its use routinely. The X-ray should always be employed before operation and often throws additional light on associated lesions such as stones and diverticula. Judd fund diverticula in 5 per cent of his cases with 15 per cent showing vesical calculi present.

Summary of Cases

In our review of cases, diverticula were found present in seven cases and stone in eleven. One

of the cases had a very unusual dumb bell stone located in the bladder and adjacent diverticulum. This is a rare combination. Two men in this group were under forty-five years of age, both having acute retention as a result of median bar formation. Two patients in this series also had a renal tumor present, one having an enlarged prostate—hypernephroma, together with perinephritic abscess. Both patients recovered following the nephrectomy and prostatectomy. One other case had been partially prostatectomized elsewhere and subsequently developed acute retention, one having multiple fistulae and necrosis of the pubic bone present. All were relieved of their obstruction and made a complete recovery. One other patient had to have a cystostomy for the removal of a large stone left in the bladder following a perineal prostatectomy done elsewhere. The average age was sixty-six years. The oldest was eighty-five years old and lived several years following the prostatectomy. Sixty cases had a two-step operation, the other forty had a prostatectomy following catheter drainage. Two patients had a combined vesical calculi and diverticulum, one having several diverticula present. There were ten negroes in this study, none of which had stone present. There were three deaths in this series, two occurring on the fourteenth day of convalescence, one being the result of a stroke of apoplexy. We did not elicit the fact that he had several strokes prior to entrance into the hospital. The other patient died from a low grade septicemia. The third death was on the seventh day following operation and was due to chronic myocarditis.

Summary of Pre-Operative Treatment

Briefly the pre-operative care of the prostatic consists in: first, drainage of the bladder with renal decompression; second, stabilization of the blood pressure plus general supportive measures; third, determination of the blood retention and dye excretion tests together with the clinical condition of the patient; fourth, a complete blood study, including hemoglobin, red cell count, leucocyte count, blood sugar, bleeding time and determination of the blood type; fifth, a complete X-ray study, including a search for metastasis if carcinoma is suspected, and if necessary cystoscopy and cystography to determine the type of prostate and whether or not associated lesions, such as stone, diverticula, or disease of the upper urinary tract, are present. Blood transfusions should be utilized if the hemaglobin remains low. We have transfused patients several times before the blood picture warranted any operative interference.

Anesthetic Used

We use ethylene anesthesia routinely in these cases and are satisfied that sacral anesthesia possesses no advantages over a carefully given ethylene anesthetic. Forty cases in this study had either spinal or sacral field block, fifteen had nitrous oxid, the remainder ethylene. The supra-pubic operation has been very satisfactory and has been utilized in all of our cases. The perineal operation has been most satisfactory in the hands of Young, Davis, and others. Lack of time precludes a discussion of the technique of prostatectomy as it is familiarly known to all present.

Post-Operative Treatment

Hemorrhage, shock, renal insufficiency, and infection are the most common post-operative complications of prostatectomy. Hemorrhage can be adequately controlled by using hemostatic gauze, preferably kephalin. The Pilcher bag is used by some operators. Shock has been greatly lessened as the result of the anesthetic now employed as well as the rapidity of opera-

Fig. 7.—X-ray of a case in which a partial prostatectomy was done elsewhere. Patient had a persistent suprapubic sinus with erosion of the pubic bone. Sinus along thigh.

tion. We use hypodermoclysis routinely as soon as the patient is returned to bed, and find that it helps to keep the blood pressure up as well as lessen shock. Fluids are given freely and can usually be taken within a short time after the operation. Water in quantity allows an interchange of body tissue fluids with the blood and increases the hemoglobin carrying power of the blood by reducing its viscosity. Infection can usually be controlled by instilling some mild antiseptic into the incision, allowing it to penetrate to the bladder and prostatic cavity. We rarely see the old, foul, greyish, incrusted sloughing incisions that we formerly did, due to the better antisepsis practiced at the present time. Hiccough is a danger signal of impending uremia and should be actively combated by forcing fluids. Hypostatic congestion of the lungs can usually be avoided by frequently turning the patient in bed and allowing him up on the fifth or sixth day. Digitalis and caffeine sodium-benzoate are very useful in an already weakened myocardium. The blood pressure should be checked daily to detect a failing circulation. Electrocardiograph studies are very essential if one finds a marked discrepancy in the systolic and diastolic pressure. Epididymitis occurs in approximately 20 per cent of the cases and can usually be relieved by elevating the scrotum and applying 5 per cent guaiacol ointment. Diathermy has been very useful in this troublesome complication. Some surgeons do a vasectomy previous to operation to prevent epididymitis. The patient should not be discharged cured until the bladder urine is relatively free from pus and urination normal. Hyperglycemia is occasionally seen following operation and delays healing. A careful check should be made of the blood sugar before and after operation. Blood transfusion is also very helpful after operation in anemic debilitated patients showing no daily improvement. In one case, that of a physician, we resorted to its use five times before operation to build up the hemoglobin from 48 to 60 per cent. His convalescence was then uninterrupted. Frequent consultation with an internist is very helpful in many cases with cardio-vascular and pulmonary complications.

End Results

We are frequently asked what effect the prostatectomy will have on the sexual function. We can definitely assure the patient that if it is present before it will be present following the operation. Hunt found 75 per cent of his cases had either no change or an improvement in the sexual desire. We can offer the patient at least a 90 per cent functional recovery after prostatectomy if malignancy can be excluded. As a result of the improvement in drainage, together with the increased internal secretion from the liberated prostatic tissues, these patients undergo a rejuvenation and frequently feel better than they have in a number of years.

Summary

The best result in prostatectomy can be obtained by observing the following:

First, early diagnosis and early surgical interference in the presence of sixty c.c. or more of residual urine, with inability to empty the bladder.

Second, a complete pre-operative examination, including X-ray, cystoscopy, cystography if indicated, dye excretion with the blood retention tests, together with a total blood study and daily urinalyses.

Third, a well inducted ethylene anesthesia plus a rapid enucleation of the prostate. Careful post-operative attention including cardio-vascular support, fluids, rigid antisepsis, and free elimination of the gastro-intestinal tract.

Bibliography

Hunt, Verne C. Benign Prostatic Hypertrophy—A Review of One Thousand Cases. *Surgery, Gynecology, and Obstetrics.* Vol. XLVI, June, 1928., pp. 769-774.

Smith, George Gilbert. The Circulation as a Factor in Prostatic Surgery. *Trans. of the Section on Urology. A. M.* A. 1927, pp. 17-27.

Willius, F. A. The Heart in Prostatic Hypertrophy. *Journal of Urology.* Vol. 13, 337, March, 1925.

Stirling, W. Calhoun. The Importance of Early Recognition of Prostatic Hypertrophy. *Virginia Medical Monthly.* October, 1921.

Stirling, W. Calhoun. Surgical Treatment of Benign Prostatism. *Virginia Medical Monthly,* 1924.

Washington Medical Building.

THE HISTORY AND AIMS OF THE VIRGINIA HOSPITAL ASSOCIATION.*

By J. M. SHACKELFORD, M. D., Martinsville, Va.

There are in Virginia 118 hospitals representing about 16,000 beds. These hospitals are scattered over the State from one end to the other, and are all working together for one common cause. It is self-evident, therefore, that a great deal of co-operation is needed,

*Address of the President before the Virginia Hospital Association, in Danville, October 16, 1928.

and that can only be brought about through a hospital association. With that end in view, thirteen hospital executives met in Roanoke, Virginia, about eighteen months ago and formed a nucleus around which was hoped would grow a large, active and useful organization to be known as "The Virginia Hospital Association". Among the active and enthusiastic organizers was Dr. S. S. Gale, of Roanoke, Virginia, who, to our sorrow, soon after that meeting passed to the Great Beyond, and by his death the Association lost one of its charter members.

In forming this Association, it was thought best to invite all hospital owners, executives, superintendents of the different hospitals and nurses to join, as it was fully realized that the medical, hospital and nursing professions are so closely allied and one profession is so dependent upon the other, that one cannot exist without the other. Therefore, it is fit that these professions join together, hand in hand, for one common cause—the success of the hospitals in this country. We must all realize that the prime cause for the existence of doctors, nurses and hospitals is for the care of the sick and of suffering humanity.

The time is within the memory of men that hospitals in Virginia were very scarce, only a few being located in the larger cities. At that time, few people could be induced to go to hospitals, and, most of those who did go, went as a last resort and from where they never expected to return. Fifty years ago no one was carried to a hospital except for a very serious operation, and the mortality rate following operations was necessarily high, not so much because of the crudeness of surgery at that time, but, because of the character of the cases submitting themselves to surgical procedures.

I well remember the time when most of the surgery from this section of Virginia was done in Richmond by that great pioneer of surgery in the South, Dr. Hunter McGuire, and if a patient for any reason could not be gotten to Richmond, his chances for relief were small indeed. At the present time, hospitals, both large and small, are within the reach of every section of the State, and I dare say that but a small percentage of the people of Virginia live outside of a radius of fifty miles of a hospital where good medical and surgical treatmet can be obtained. There is at present, in almost every town with as many as 5,000 population, a hospital with from fifteen to fifty beds, sufficiently equipped to take care of 90 per cent of the people who can be benefited by hospital treatment.

The hospitals in the smaller towns or communities cannot furnish the specially trained and efficient clinicians in the various specialties that are found connected with the clinics of the cities, where every test can be made, but they do contain men of experience and common sense who by their knowledge of clinical medicine and surgery can and do arrive at a diagnosis sufficiently accurate to render the proper therapeutic measures and give the patient relief.

The older men of the profession knew but little about blood chemistry and blood counts, but they did have a wonderful sense of touch and of observation. They had good reasoning powers and used their knowledge in a way which would put the average present day diagnostician, with all of his modern equipment, to shame.

When I think of such men as Dr. W. L. Robinson of this city; Dr. R. S. Martin, of Stuart, Virginia, and numbers of other men of their type, who have now gone to their reward. I think of them as master surgeons. Along with their knowledge of surgery, they knew medicine, obstetrics, pediatrics, and in fact, were all round well trained physicians and surgeons, practical and common sense in every way, and relied upon themselves and their knowledge of medicine, rather than upon results obtained in the laboratory. They were pioneers in the surgical and hospital field, and their work today would be considered standard from a practical standpoint.

It took better surgeons to do good surgery thirty years ago than it does today, for surgery then was more complicated and harder to do, because an operative case only came to the hospital after all other means had failed and an inevitable death was in sight.

As I have said before, the small hospitals in the various towns can handle at least 90 per cent of the cases which apply for treatment, and the other 10 per cent can be sent to larger hospitals or clinics where diagnostic and operative facilities are more elaborate.

During the last quarter of a century, so many manufacturing plants have sprung up in the different sections of the State, that hos-

pitals have become a necessity for the treatment of injured employees and the population generally, and when a community establishes a hospital, a better grade of trained medical men are naturally attracted to that section. (The best trained men of today hesitate to locate in a section remote from hospital advantages). In these small hospitals, industrial and automobile injuries are well treated. Cases of appendicitis, hernia, tonsils, gallstones and infected gall-bladders, etc., are cared for with much less expense and greater safety than could be obtained in larger hospitals, after a delay of many hours and a trip over rough roads in order to reach a larger hospital in a city. Therefore, I contend that the small, well-equipped hospital is a Godsend to any community, and should be supported and encouraged from every angle. It is through a Hospital Association that these hospitals can be helped and supported and made to conform to a city institution in every way, except possibly in size. The Boards of Supervisors in various Counties and the Councils of the Towns in which the hospitals are located should be taught to look upon these Institutions as a necessity and should contribute to their support in order that they may be made more efficient and do a greater good for the community. A hospital, even if it is small, is an asset to any community and should be the pride of its citizens. The people should be taught to feel the same interest in their hospitals that they do in their churches. A congregation in almost any town can get together from fifty to one hundred thousand dollars to build a new church, especially if another congregation in the same town has just completed one, and that same town could not raise ten thousand dollars for a hospital. There are numbers of towns in Virginia with church investments of several hundred thousand of dollars and not a free hospital bed or a penny contributed to the support of a local hospital. This condition of affairs is not willful or deliberate, but due to the lack of thought on the part of the public.

This Association can and should do much to wake up the people and inculcate in them a spirit of true citizenship. They should be shown their duties, and when they see them as they are they will become more interested.

There is a notion among many people, and I am sorry to say some people who are connected with hospitals, that it is wrong to operate a hospital for profit. They say it is wrong to commercialize on sick people. Now, if it is wrong to sell sick people groceries or merchandise or other necessities of life for a profit, it is also wrong to sell them medical or hospital services for a profit. I see no reason why a hospital should not be managed, if possible, so as to make it pay running expenses, a legal interest on the investment, and the doctors in charge their professional fees. If running a hospital for a living and possibly a profit is not right, is it not equally wrong to practice medicine and surgery for a living and possibly a margin of profit? I am sorry to say that but few hospitals show a profit, but, there is no just reason why they should be a burden to the owners and operators.

I trust the Virginia Hospital Association may be a medium through which the hospitals of Virginia may work together for the mutual interest and advancement of each other. I am sure as much can be accomplished through co-operation of hospitals as is accomplished through co-operation in other lines. The larger hospitals could sell the smaller ones good serviceable equipment, which they have outgrown or discarded, to the financial interest of both. They might be able to contract for supplies together and thereby save a considerable amount in the course of a year.

Another matter which should be looked into by this Association is the professional *deadbeat*. All over this country there are numbers of men who have reared families at no cost for medical or hospital services. They think it is legitimate and right to beat doctors for their services and to obtain hospital maintenance free. I do not refer to cases of true charity, but to the great mass of people who are strong and able to work, who own their own cars, pay their merchandise bills, buy whiskey and gas and travel the roads during their leisure, and at the same time get their medical examinations at free clinics, with drugs furnished. Many of these people are in better condition financially than the doctor who is giving his time and service free.

It is perfectly legitimate and right to do charity where charity exists, but there should be a line of demarcation and the man who is able to pay his doctor or his hospital should be required to do so. I believe it is wrong to pauperize any man by making him too many

gifts. If you once convince a man that he is a pauper and that all of his requirements should be supplied *gratis*, you have done him a great injustice which he will never outgrow.

My plan is to charge every man a reasonable fee and let him know what it is, and if he never gets able to pay it, he always owes it. Many people are poor, but have a lot of pride and self-respect and rebel at the idea of being classed as paupers. They do not accept gifts cheerfully and feel much better if leniency only is extended and they are allowed later to go to work and extricate themselves from their financial difficulties.

Now in conclusion, I want to say, as the first President of the Virginia Hospital Association, that the Association is only about eighteen months old, almost in its embryonic stage, but it is a thrifty youngster, full of pep and vim, capable of being nourished, trained, educated and developed into a great power for good in the hospital field, and as I turn it over to my successors at the end of this meeting, I bid you unlimited success. I hope to see it grow by leaps and bounds under the management of those who will follow me in my feeble efforts.

I desire to thank the members of the profession for the encouragement and support they have given me during the existence of this Association, and especially do I thank the readers of the papers on this occasion for their contributions to the success of this meeting.

PLEURAL COMPLICATIONS OF UPPER ABDOMINAL PATHOLOGY.

By CHARLES CARROLL SMITH, M. D., Norfolk, Va.

When one pauses to consider the intimate relationship of the abdominal and thoracic cavities, it seems rather strange that pathology having its inception in the one does not more often invade the other. The relationship between the peritoneum and the pleurae is no less intimate and these two structures have much in common and presumably should be susceptible to much the same organisms. They are all three large serous membranes and normally form closed sacs except for the small openings in the fallopian tubes in the female. The structure is the same, consisting of a layer of flattened endothelium over a subserous areolar tissue. That they are not contiguous is due to the interposition of the diaphragm, a muscular sheet composed of fibres radiating from the lower border of the thorax and from the upper lumbar vertebrae towards a central tendonous area, termed the centrum tendineum. It is pierced by the inferior vena cava, the oesophagus, aorta, and thoracic duct. The upper surface of the diaphragm forms the floor of the thoracic cavity and is in contact with the pleurae and pericardium, the latter being adherent to the centrum tendineum. Below, the diaphragm is largely invested by the peritoneum and is in relation with the liver, stomach, spleen, kidneys, supra-renal bodies, duodenum, pancreas, inferior vena cava and branches of the coeliac artery.

The lymphatics of the diaphragm form a rich network upon both its surfaces, that upon the peritoneal surface being especially well developed, and numerous vessels traverse the substance of both the muscular tissue and the centrum tendineum, uniting the network of the abdominal with that of the thoracic surface. Upon the thoracic surface the network is exceedingly fine and close-meshed in the region of the centrum tendineum being more distinct in the regions of the lateral leaflets. From this network branches pass outward parallel to the muscular fibres to unite with a series of anastomosing stems whose general direction is forward. Branches coming from the more peripheral portions of the diaphragm also empty into the stems, which carry the lymph forward to the diaphragmatic nodes, where it passes to the anterior mediastinal nodes. From the network of the lateral leaflets of the central tendon, collecting stems are also directed backward and medially toward the aortic opening which they traverse to terminate in the upper coeliac nodes.

It is to be observed that the nodes of the thoracic surface are for the most part situated anteriorly while the coeliac nodes, which may be considered as the principal nodes of the inferior surface, are located posteriorly. Both sets of nodes, however, received lymph from both surfaces of the diaphragm by means of the perforating branches which connect the upper and lower networks. The lower network is, furthermore, connected with the lymphatics of the more lateral portions of the peritoneum, and also with those of the liver, while the upper network makes connection with the lymphathic vessels of the pleurae.

Stated in brief, the destination of the hepatic lymphatics is principally the hepatic nodes situated in the transverse fissure and the diaphragmatic nodes which surround the opening of the inferior vena cava. It is to be remembered that numerous communications exist between the superficial hepatic lymphatics and those which form the network of the abdominal surface of the diaphragm. These communications when considered in connection with the existence of the perforating branches explain the occurrence of pleuritis as a sequence of subphrenic abscess, infections of the liver, or the upper abdominal pathology.

Moreover, infections in parts so freely open to lymphatic drainage would almost inevitably lead to entrance of the organism into the blood stream and most certainly an organism with a predilection for the serous membrane of the peritoneum would find no more home-like a place to settle and propagate its species than the almost identical serous membrane of the pleurae. One other mode of entrance might suggest itself when we consider that the subserous areolar tissue of the peritoneum and that of the pleurae are but very slightly altered to form the external coat of the eosophagus and the adventitia of the aorta and other vessels traversing the diaphragm.

In view of such favorable conditions, it seems rather unusual that coincident pathology in these two cavities, the abdomen and the theorax, does not more often occur and equally surprising is the fact that there is such a paucity of literature on the subject. That such combined pathology does at times occur we are sure and our observations are borne out, though in the reverse direction, by the findings at autopsy in a large series of flu cases during the epidemic. Dunham noted the frequency of acute fibrinous perihepatitis, perisplenitis, and fibrinous agglutination of the stomach to the neighboring organs at autopsy of acute empyemata of flu origin.

Three rather interesting cases compiled from the surgical service of Dr. R. L. Payne, at St. Vincent's Hospital, were the incentive for this paper and I herewith wish to report these cases as briefly as is compatible with clarity.

Case 17665—L. B. S., white male, age 28, admitted September 9, 1924, discharged December 13, 1924. Stay in hospital 76 days. This patient, a robust young man, had a negative family history and his previous health had been excellent without exception. One month prior to admittance his illness began with acute abdominal pain in the left upper quadrant and was diagnosed kidney colic. The pain became less acute but more generalized, gastrointestinal disturbance then began to predominate, and a toxemia ensued which seriously impaired his mentality. At this time typhoid was suspected but Widal was negative as was also Wassermann. One week before entrance to hospital, patient had acute pain in upper right quadrant and began to show signs of jaundice. This state of affairs persisted until he fell into our hands; a day or so before this, however, his pain seemed to include the lower thoracic region and he had a slight cough. Nausea and vomiting were causing great distress. Physical examination showed that he had a distended abdomen with more or less general rigidity but with distinct tenderness over the gall-bladder and liver. The liver was somewhat enlarged, jaundice not profound but well marked of skin, sclera and mucous membranes. The right side of the chest was retracted, the percussion note was impaired over the entire right side. There was flatness of the right base. Temperature 100, pulse 120, respiration 30, patient was very toxic, irritable, and almost delirious. Urinalysis showed albumen two plus, bile two plus, number of fine and coarse granular casts. W. B. C. 17,000, polys 80 per cent. Wassermann and spinal fluid negative. Liver function test below normal. X-ray report, gall-bladder throws suspicious shadow. Suspicious shadows as of small calculus left lower ureter. The case was obscure. We suspected chest but could not get away from the biliary tract symptoms and laboratory findings. He ran a septic temperature for ten days with little or no change in the general condition or physical findings. Blood culture during this time was negative. Aspiration of the right chest on the 6th of October was negative, but on the 15th 400 c.c. of a rather thick fluid was obtained and two days later resection of the 9th rib on the right side and drainage of the pleura liberated a large quantity of thick foul smelling pus. Improvement was gradual but steady, digestive symptoms were still in evidence as was jaundice, but these gradually subsided along with the tenderness over gall-bladder and we were left with apparently just the empyema with which to deal. The cavity was irrigated daily

with 1-1000 gentian violet and after a rather prolonged convalescence the patient was discharged well on the road to recovery. The patient was seen only a few days ago and is in excellent health and has had no further trouble either with the abdomen or thorax.

Case 15995—Miss E. W., white female, age 38, admitted May 9, 1924, discharged July 22, 1924. Stay in hospital 75 days. Three or four days before admission this patient was taken with severe colicky pain in the right upper abdomen with tenderness over the gall-bladder. There was elevation of temperature, nausea and vomiting, and a history of rather long standing digestive disturbances with much distress from gas accompanied by belching. Diagnosis of bile tract infection was made and patient advised to seek surgical relief. There were no symptoms referable to the chest at this time nor on admittance to hospital.

The day after admittance patient complained of pain over lower costal margin on left side. Physical examination at this time showed a large well nourished woman acutely ill. The abdomen was distended with rigidity of upper recti more marked in the right. There was distinct and acute tenderness over the gall-bladder region and the liver was very slightly, if at all enlarged; distinct jaundice of sclera. Chest wall was thick, respiratory excursion limited and there was a restrained cough. Over the left lower lobe and base of the lung there was marked bronchophony and pectoriloquy with tubular breathing and fine rales and above this a friction rub. There was diminished resonance over this area. The right lung was apparently normal as were also the cardiac findings. Temperature 99½, pulse 110, of poor volume; respiration 18. Urinalysis-albumen two plus, bile trace, few hyalin casts. Analysis few days later showed very positive for bile. W. B. C. 25,000, polys 86 per cent. Ten days later 86,000, polys 93 per cent, then a gradual drop to 25,600 with polys 82 per cent just prior to operation. Progress—temperature reached 102 on 10th day with no marked change in physical findings, then on the 19th day dropped to subnormal with pulse accelerated to 140, and a rapid rise in respiratory rate to 38. Then began a period of extreme toxemia with septic temperature.

Left pleural cavity aspirated and 500 c.c. of slightly cloudy fluid withdrawn; four days later 1,400 c.c. of fluid withdrawn. Smears showed staphylococci but cultures showed no growth after 12 hours. Patient showed improvement, but one week later 300 c.c. of purulent fluid was aspirated and two days later the left 9th rib was resected and tube drainage instituted. The convalescence from that time on was slow and accompanied by fluctuations of temperature and drainage but was without incident sufficient to chronicle here.

Case 18251. This case is of interest from other angles than the one incorporated in this paper. The patient a young white woman had a general peritonitis of some days' standing and, as a complication, developed a bilateral empyema. All three were drained and she recovered. I was struck with the scarcity of reported cases of double empyema and at the time this case was in our hands could find little advice in text books or current literature as to the advisability and mode of procedure of instituting drainage into both pleurae. The few references I found all cautioned the operator to use all possible means to prevent collapse of the lungs, practically each one advising the use of some complicated pressure chamber which was not at our disposal.

Oschner says that he had operated only a few such cases and stated that it is important to operate in two stages, the side containing the most pus being chosen for the first operation and the second operation being postponed as long as the patient continues to improve. Our case was operated upon with a two day interval between the drainage of the right and left sides. The case report is as follows: Mrs. P. T., white female, age 29, admitted November 26, 1924, discharged February 13, 1925. Stay in hospital 80 days. Friday, November 22nd, patient had acute severe pain in epigastrium followed in three or four hours by nausea and vomiting. Vomiting persisted with severe colicky pain which remained localized in the epigastrium and right hypochondriac regions. The next day, patient was weaker and pain was diffuse over entire abdomen. Except for increasing toxemia and gradual decrease of vitality, condition remained unchanged until admittance, Thursday, November 27th, on which day she was operated. History states that patient had had gastric disturbance for four or five years, nausea, a feeling of fullness and a dull ache high in the epigastrium coming on about one hour after

eating and relieved by soda. She had been in the habit of taking soda to bed with her at night for relief of pain. Patient also had choking spells and attacks of colic beginning in epigastrium and right hypochondriac region, radiating to right scapula.

Physical examination showed distended abdomen with generalized tenderness and rigidity. Urinalysis—albumen two plus, number of hyalin and fine granular casts. W. B. C. 17,200, polys 90 per cent. Operative record states that there was a general peritonitis with so much free pus and fibrin in the abdominal cavity that it was difficult to determine whether it was a ruptured duodenal ulcer or appendicitis. The appendix was removed. Pathological report on appendix states that external surface showed rough hemorrhagic spots covered by greyish exudate. Diagnosis, acute gangrenous appendicitis with general peritonitis.

The author is of the opinion that it might just as well have been a ruptured duodenal ulcer with changes in appendix due to the general peritonitis since the description of the appendix states that most of the pathology was on the external or peritoneal surface. The patient was operated on November 27, 1924, and, as one would judge from the pathology, her convalescence was anything but smooth. Her condition was grave and the prognosis looked decidedly bad, but in a week or ten days she was improved to such an extent that we were at least hopeful. The first sign of impending pleural trouble was on the 16th of December, when the patient complained of shortness of breath and the medical consultant reported flatness over both lungs posteriorly, with absence of breath sounds. The patient had such a desperate abdominal condition, we were loathe to lay much stress on the finding and made vaginal examination for possible pelvic abscess but found no bulging or masses. Blood cultures negative. W. B. C. 12,800, polys 72 per cent. The patient did not seem to improve though she showed very little change for worse until January 2, 1925. She began to grow weaker, pulse began to climb and examination of chest showed that the area of flatness was considerably larger. Both right and left pleurae were aspirated and a thick purulent fluid obtained, only about 100 c.c. from each side, the fluid being too thick to run through needles. On January 5th the right side was drained under local anesthesia, intercostal drainage being used. A small groove was taken out of the superior border of the 9th rib and a snug fitting tube inserted, care being taken to make the procedure as near a closed method as possible. On the 7th the tube in right side was clamped off and the gauze around tube heavily coated with vaseline to render the right side air tight and intercostal drainage with trocar-cannula and large size catheter was done on left side. There was no embarrassment of respiration or other untoward symptoms and at no time was there any difficulty in irrigating both pleurae with 1-1000 gentian violet, though we were careful not to have both filled at the same time. We found it feasible to fill one side and allow the solution to stay in for an hour, then let it drain off before repeating the procedure on the opposite side. Later on, after adhesions had fixed the lungs and a tolerance for the irrigations had been established, the irrigations were completed at one dressing.

The last case is obviously one in which a purulent pleuritis followed a peritonitis, which either began in or invaded the upper abdomen. Whether this complication ensued from direct transmission through the lymphatics or was the result of a blood borne organism with a predilection for serosa, we have no definite proof and little in circumstantial evidence other than the fact that at all times the blood culture was negative.

In view of this case and when we consider the history and symptoms of the other two, are we justified in supposing that they began as infections in and around the biliary tract and because anatomic conditions were favorable secondarily invaded the thoracic cavity with resulting empyemata? On the other hand, could they have been obscure thoracic infections such as small, deep-seated lung abscesses that caused grave toxemia almost to the point of fatalities and were thwarted from such an end by rupture into the pleurae and manifestation of definite physical signs of empyema? At any rate, I assure you that all three were sufficiently obscure to call forth all the means at our demand before we successfully solved them.

805 *Medical Arts Building.*

When things go wrong, why just be glad
They have happened twice as bad.

—*Selected.*

DR. JESSEE BENNETT, (1769-1842) Pioneer Surgeon. DR. AQUILLA LEIGHTON KNIGHT, (1823-1897) Humanist.

Old Virginia Doctors: "Who saw life steadily and saw it whole."

By JOSEPH LYON MILLER, M. D., Thomas, West Va.

On the 14th day of January, one hundred and thirty-five years ago, a young pioneer physician in the Valley of Virginia performed an operation that, had it been reported at the time, would have assured him a place of honor in the medical history of America.

Believing that, even at this late date, the case should be presented to the profession in Virginia, I am now offering this account of it, hoping the evidence will be sufficient to warrant belated recognition being bestowed upon the memory of

DR. JESSEE BENNETT, WHO DID THE FIRST SUCCESSFUL CESAREAN SECTION IN AMERICA.

The first appearance in print of this case was in 1891 in The History of The Great Kanawha Valley, Vol. II, page 265. The chapter on the medical history of the Valley was written by Dr. A. L. Knight, who knew Dr. Bennett well, and had his information from two persons present at the operation. In addition to my interest in the case from the standpoint of medical history, I have a further interest due to the fact that Dr. Bennett spent the last forty-five years of his life in my native county of Mason and for many years was my grandfather's family physician; Dr. Knight was also a native of Mason and a lifetime friend and physician of my father. The fuller details of the operation were given to me personally by Dr. Knight, as it was not suitable to publish them in a popular local history, and check with the traditions held by Dr. Bennett's descendants who are prominent citizens of the Great Kanawha Valley. From these sources I have the following account of Dr. Bennett and the Cesarean section he did on his own wife on the 14th of January, 1794, in Rockingham County, Virginia.

Jessee Bennett, of Norman-French ancestry, was born July 10, 1769, at Frankfort, Philadelphia County, Pennsylvania, and died at his home "Riverview", Mason County, Virginia, July 13, 1842. After reading medicine with a physician in Philadelphia, he completed his education at The University of Pennsylvania, and is said by a contemporary to have been "a thorough anatomist and most excellent surgeon". In 1792 he settled in the Valley of Virginia to practice his profession, and on the 8th of April, 1793, was married to Elizabeth Hog, daughter of Maj. Peter Hog, a graduate of the University of Edinburgh, a prominent officer in the French and Indian war, pioneer lawyer of the Valley, and first clerk of Rockingham County, from 1777 till his death in 1782.

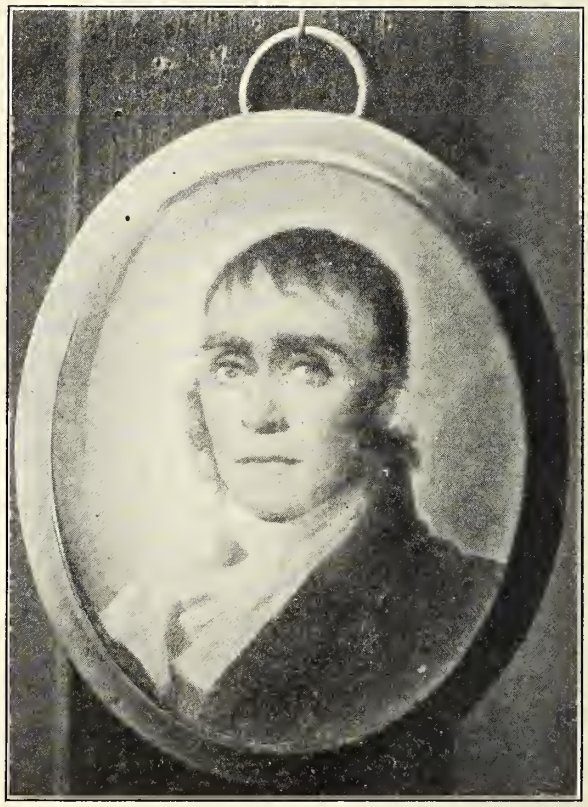
THE OPERATION

In due course Mrs. Bennett came to her first and only confinement. Owing to a contracted pelvis, or other obstruction not known definitely, assistance was called in the person of Dr. Alexander Humphreys, of Staunton. After consultation and an unsuccessful attempt at a forceps delivery it was decided that but two courses were open to them—either craniotomy or Cesarean section. Mrs. Bennett thinking she was going to die anyway insisted that the child should be saved, so, over the protest of Dr. Humphreys, preparation was made to do the operation, which at that time was one almost unheard of on the living mother anywhere in the world. Dr. Humphreys refusing to undertake so formidable an operation, Dr. Bennett proceeded with it himself. The details related by those present are: Mrs. Bennett was given a large dose of laudanum which, with her previous weakness quickly put her to sleep. She was then placed on a table made of two planks laid on a couple of barrels, and with two negro servant women to hold her, Dr. Bennett with one quick sweep of the knife laid open the abdomen and uterus. Enlarging the opening in the uterus with his hands he quickly lifted out the child and placenta. Before closing the wound, which he did with some stout linen thread used in making heavy clothing, he remarked "This shall be the last one" and proceeded to remove both ovaries, or in the language of one of the witnesses "he spayed her". Much to the surprise of everyone, both Mrs. Bennett and the child, a daughter, survived, Mrs. Bennett dying many years after their removal to Mason County and the daughter at the age of seventy-seven in

1871. The account of the operation was related to Dr. Knight by Mrs. Bennett's sister, Mrs. William Hawkins, and one of the negro women, both of whom were in the room all during the operation.

Before proceeding with the account of Dr. Bennett's later years, I think it best to state more fully Dr. Knight's connection and interest in the Bennetts. About a mile from the Bennett home on the Ohio River lived the Knights, friends and patients of the old doctor. Though young Knight knew Dr. Bennett well and was nearly twenty years old when the old doctor died, he naturally had never questioned him regarding the unusual manner of his daughter's birth, though he knew of the case from neighborhood gossip; but, as soon as he had finished his own medical education a few years later, he proceeded to satisfy his curiosity by getting all the information possible from all then living who knew about it. These included not only the daughter born by the operation (at this time the wife of Dr. Enos Thomas), but fortunately also the two eye-witnesses named above. When Mrs. Hawkins was asked if she knew why Dr. Bennett had never reported the case to some medical society or magazine, she said that she had heard him say that "no strange doctors would believe that operation could be done in the Virginia backwoods and the mother live, and he'd be damned if he would give them a chance to call him a liar." That on another occasion she heard him say that "no doctor with any feelings of delicacy would report an operation he had done on his own wife." At this time a Cesarean section with living mother and child were practically unknown anywhere in the world, even in the greatest medical centers. It antedates by thirty-three years that of Dr. John Richmond at Newtown, Ohio, which is given credit as the *first* in America. The oophorectomy done by Dr. Bennett preceded by seventy-eight years that of Dr. Robert Battey, of Rome, Georgia, who is given credit as the first to advise and remove non-diseased ovaries. It even precedes McDowell's famous ovariotomy by fifteen years. Newtown, Ohio, being less than two hundred miles away from Mason County affords speculation as to whether Dr. Richmond may not have known Dr. Bennett, or at least have heard of his operation and its success, and from them drew courage to proceed with his own when the necessity arose.

In 1795 Dr. Bennett joined the army as a surgeon in the "Whiskey Rebellion", and two years later, in company with his wife's brother, Thomas Hog, and sister Mrs. Nancy Hawkins and their families, removed with his family to settle on a tract of nine thousand acres of land granted to his father-in-law, Maj. Peter Hog, on the Ohio River about six miles above the mouth of the Great Kanawha. At this time he was the only doctor in a territory along the Ohio and Kanawha rivers for fifty to a hundred miles from his home, and so great was his reputation that even after competition came in he was still called far and wide, particularly in all surgical cases. In 1804 when the new county of Mason was cut off of



DR. JESSEE BENNETT (1769-1842)
Miniature owned by his great granddaughter, Mrs. Mary Shaw Cargill.

Kanawha County, Dr. Bennett was one of the justices of the first court, major in the county militia, and in 1808 and 1809, in company with my own great grandfather, Col. John Henderson, represented the county in the Virginia

Assembly. In the War of 1812 he served as surgeon in the 2nd Virginia Regiment. Aaron Burr tried hard to persuade him to join his expedition and to turn over all the arms and military stores of the militia. This caused the old doctor to be summoned to Richmond as a witness against Burr, and while there he had his miniature painted, which is reproduced here and is at present owned by his great granddaughter, Mrs Mary Shaw Cargill, of Winfield, West Virginia. He was a small active man, with reddish hair, and it is said had the temper which usually accmpanies it. Many interesting anecdotes have been handed down regarding the old doctor in his practice, and his sporting proclivities as a game hunter, and owner of the first race horses in that section of Virginia. To relate many of these would prolong this paper too much, but perhaps one or two will not be out of place.

He delighted to relate an experience when he was bested in an obstetric case by a "Thompsonian" or "yarb doctor". These woods doctors were audacious in proportion to their ignorance of pathology, and would undertake to cure anything from pneumonia to cancer with their roots and leaves. On this occasion one of the regular profession several miles away in Mercer's Bottom had a difficult labor case and sent for Dr. Bennett in consultation. After examination he advised forceps, and while they were on the front porch of the home discussing it they saw "Old Root and Yarb", as he was known, coming down the road carrying a huge pair of saddlepockets swung over his shoulder. For the sake of a little amusement it was proposed they call him in and state the case and ask for his advice. When this was done he replied "well gentlemen have you sneezed her?" "Before using them hurtful things I'd sneeze her." Feeling that he could do no harm they said "Suppose you try it", which he did by the aid of snuff from a large old pewter box he carried. To their great surprise, a few minutes later a new citizen was claiming his rights with a vociferous voice, and "them hurtful things" were not needed.

Dr. Bennett's lack of orthodox religious belief is the foundation for another good story. This lack, however, did not deter the clergy of all denominations frequently accepting his hospitality, doubtless each one hoping to land the old doctor in his own particular fold. One night in June, 1815, the pastor of a neighboring church in riding his circuit stopped at Dr. Bennett's. At this time the Ohio River was quite high, and further rain during the night backed it up in Oldtown Creek till it was unfordable. As it was necessary for the Rev. Mr. Smithers to proceed on his journey the next morning, Dr. Bennett took him on behind him on his big bay horse and swam the creek. On the opposite bank they met an old servant of Col. Charles Lewis who lived on that side and Dr. Bennett said to him, "Well, Kyer, if old Tom had sunk and drowned Mr. Smithers and me which one would Old Nick have grabbed first?" "Marse Smithers", laughed Kyer, "caise he aint sho' o' him an' he don sho' o' you now sah."

A few years after settling on the Ohio Dr. Bennett replaced his first log house with a substantial brick residence still standing, and I still have many pleasant recollections of the unstinted hospitality of "Riverview" when owned by the old doctor's nephew, Mr. Walter Hardin Hog, whose string of fine horses were known on many of the race tracks of West Virginia, Ohio and Kentucky.

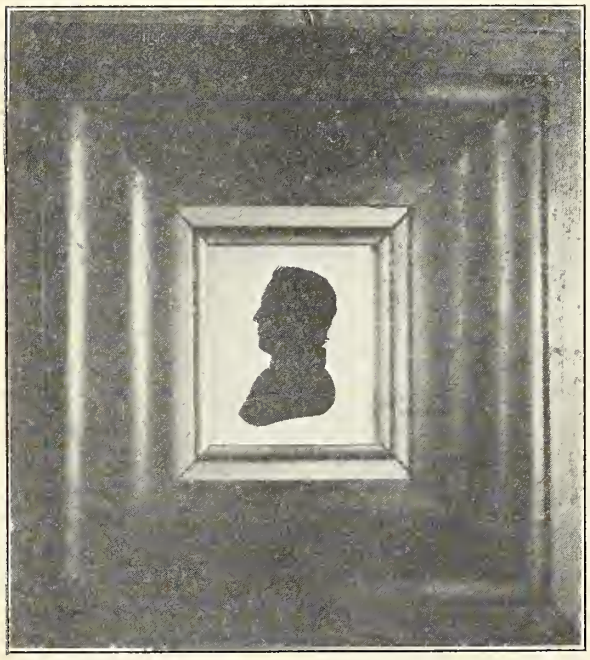
Dr. Knight

Since at this late date the account of this first successful Cesarean section in America must stand largely upon the veracity of the doctor who gathered the facts and first reported it, I believe that an account of the life and character of Dr. Aquilla Leighton Knight will not be out of place.

He was born on Christmas day, 1823, about a mile from the home of Dr. Bennett. At the age of fourteen he had acquired all the knowledge the local teachers could impart, in addition to doing a vast amount of outside reading, or as the Hon. John Hall, a wealthy neighbor remarked in later years "Dr. Knight read every book in my library before he was fifteen years of age." His father then was fortunate enough to secure as a tutor for him an Englishman named Alexander H. Porter, a graduate of Cambridge University, England, and later a professor in Oxford University, Ohio. The two years' study with Prof. Porter included Latin, French, German, higher mathematics and English, and he had so crowded those two years that his preceptor declared him as proficient as any collegiate with the degree of A. B. After teaching for four years he read medicine with Dr. Daniel Couch, of Point Pleasant,

later entering the medical department of Western Reserve University at Cleveland, Ohio, from which he was graduated in March, 1850, second in a class of seventy-six. Returning home he built up the largest practice in that part of the Ohio valley by the time the Civil War came on. In July, 1861, he entered the Confederate army as a surgeon and, after being in several battles, was taken prisoner and confined in the Wheeling jail for nearly a year, then released on parole till the close of the war. The war swept away many thousand dollars' worth of slaves and other property leaving him only his home but, like the rest of the Confederates, undaunted, he started to rebuild his shattered fortunes.

Dr. Knight's student days did not end when he left college, but all his life he studied and read widely, not only in the literature of his



DR. A. L. KNIGHT (1823-1897)
Silhouette owned by the author.

profession, but also in the sciences of chemistry, botany, astronomy and geology, the classics, and medical and general history. His most prominent natural talent was for drawing and painting which afforded him greater pleasure than all the rest. He developed this so highly that several of his paintings of a historical character were hung on the walls of the state capitol at Charleston and were lost in the fire that destroyed that building a few years ago.

In speaking of Dr. Knight, Dr. Robert Hamilton, himself a well known physician of the Kanawha Valley, said: "Dr. Knight will have much to answer for; nature has given him the full ten talents, while some of us have but one, and others but four or five at most. Why, he is artist, poet, mechanic, musician, scientist, linguist, and regarded by all who know him, as I do, as one of the most skillful physicians and surgeons between Pittsburgh and Cincinnati." He was an active member of the Mason County Medical Society, The Meigs County (Ohio) Medical Society, The Ohio Valley Medical Society, and the West Virginia State Medical Association, and two or more times was president of the first three and vice-president of the latter.

It is with pleasure and happy recollections that I here pay tribute to the memory of Dr. Aquilla Leighton Knight as one of the finest men I have ever known. A splendid specimen of that fine type of old Virginia gentlemen physicians. His wide acquaintance with the world's best literature, and sympathetic understanding of humanity in its various phases as a doctor sees it in many years' practice, made him one of the most delightful companions and mentor. To the inspiration derived from him more than to anyone else do I owe my love for the cultural side of medicine and its history. I cannot close without quoting something he said to me many years ago in his office as I was leaving to enter college. "I have won many triumphs, but the grandest has been the conquest of myself."

The lives of such men as Dr. Bennett, Dr. Knight, and Dr. Mettauer, in their restricted environment as country practitioners in Virginia, though without the fame that came to some of their contemporaries as McDowell. Long and Sims, make us proud of the old country doctors of the South.

UNUNITED FRACTURES.

By M. J. PAYNE, M. D., F. A. C. S., Staunton, Va.

An ununited fracture may be defined as a fracture in which bony union is absent, or doee not occur; that is, a fracture in which union is not effected at all, or in which the union is not bony. There is then a failure of consolidation and proper ossification. It is proper to include all cases of fractures as ununited in which fibrous or cartilaginous union occurs. Delayed union is a retardation

of the reparative process. What time limit then shall be established in cases of delayed union in order that the case in question may be established or defined as one of ununited fracture? It is safest to class all fractures as ununited in which bony union of the bone in question does not occur within the time limit for normal bony union. Normally, ossification is completed in from three to six weeks.

The varieties of non-united fractures may be described as:

1st: Absolute non-union. That is in fractures in which no attempt at all is made at repair. This rarely occurs except when some definite bone disease co-exists, e. g., sarcoma, osteomalacia, and in very debilitated patients, and when no attempt has been made to maintain fixation of the bony parts.

2nd: Fibrous union when the development of a more or less firm mass of connective tissue, without ossification, forms as a band between the ends of the bone.

3rd: Pseudoarthrosis, or false joint, in which the bone ends of the fragments are covered by bone or cartilage, and are so altered in shape that a ball and socket type false joint is formed, having a surrounding fibrous tissue capsule, and having an adventitious bursa comprising a pseudo-synovial.

Disunited fracture is the term applied to a fracture, a rare condition, in which a fracture which had been firmly united becomes separated again. It may be seen when an individual develops some extremely debilitating disease closely following the fracture, such as scurvy.

Anatomy of Ununited Fractures. An ununited fracture may result from any variety of fracture. A greater liability is seen in multiple, compound, comminuted, extensive fractures, and in fractures in which the bone ends are crushed or bony mass is lost. The types of ununited fractures may be described as: The gap fracture which is seen in the case of the radius, ulna, and tibia when the companion bone has remained intact. The bone ends are usually rounded or conical, the bone substance is much atrophied and consists of a thin shell of bone containing fatty marrow. Between the bone ends may be found connective tissue, bone debris, and foreign bodies. The pseudoarthrosis is found in non-union of the humerus and the femur. The bone ends are densely sclerosed and present osteophytic growths. The medullary cavity is obliterated for a considerable distance, and the surface of the ends of the fragments is invested with fibro-cartilage. Between the bone ends may be found a mass of connective tissue, forming a pseudo-synovia having glary fluid contents. The fragile atrophic bone in the gap fracture presents a marked contrast to the dense sclerosed bone of the pseudoarthrosis.

Causes. The causes may be local and constitutional. Local; loss of substance, interposition of soft parts, sclerosis of the bone, over-extension, ill-advised plating, wiring, want of approximation of fragments, want of rest, meddling examinations on part of attendant and patient (recently, a patient removed dressings at will). There may be poor blood supply, the nutrient artery torn, or the vein thrombosed. Defective innervation, bone diseases, improper splinting, tight bandaging, infected compound fractures, extensive multiple fractures, are other local causes. Constitutional malnutrition is the most common cause. Sometimes non-union results without any assignable cause. A fracture may unite, then separate again due to absorption or fracture of the callus. Refracture at the site of a former recent fracture may result in non-union or a much delayed union.

The interposition of soft tissue between the fragments is the most common local cause of non-union. Complete fixation of the fragments at first limits the formation of the provisional callus, and greatly enhances the occurrence of bony union of the bone. Mobility of the fragments increases the provisional callus and the connective tissue formation in direct consequence, and therefore increases the liability of non-union. At times months are required to effect perfectly firm bony union.

Frequency. Ununited fractures are not very common, but are more frequent than formerly and ordinarily supposed. Treves states that one in eighty cases results in non-union.

In view of the large number of liability and malpractice claims growing out of injuries attended by fractures alone, the subject becomes of great importance to the industrial and railroad surgeon. Furthermore, in view of the occurrence of non-union, and delayed union, the importance of the subject cannot be too greatly estimated.

According to Keen's Surgery, the relative

frequency of non-union in the long bones exclusive of the fibula, compiled from sixty consecutive cases, is as follows: femur 26.4 per cent; humerus 22 per cent; radius 12 per cent; ulna 12 per cent; radius and ulna 5 per cent; tibia 6.6 per cent.

Briefly, though less acute symptoms and signs are essentially those of a fracture without crepitus, pain on active motion in the region of the fracture, a number of weeks after the occurrence of the fracture, suggests non-union. If tenderness is also present, non-union is highly probable. If with pain and tenderness there is a marked thickening from callus, non-union is certain. According to an article appearing in the *British Medical Journal*, marked thickening and infiltration of the overlying soft tissue will be observed in connection with the foregoing. The X-ray examination should be conclusive.

Prognosis. Unless there has been grave infection or great bony loss or changes, with suitable treatment satisfactory results should occur. In malignant disease and in grave constitutional diseases, the prognosis is unfavorable.

Treatment is mainly preventive. Secure rest to all fractures immediately or as soon after the injury as practical. Rest includes proper fixation and proper reduction. Maintain rest for a suitable period of time. Over-extension by too great traction is as hurtful as lack of extension. The X-ray is absolutely essential in order that a proper understanding of the position of the fragments may be obtained. It is well also to recall that many ununited fractures have their origin in unwise operative interference. John H. Gibbon in *International Journal of Medicine and Surgery*, October, 1924, says: "Up to the time of the great war, there had been developing for years a tendency to operate upon and plate most simple fractures, a pernicious tendency which it seemed nearly impossible to stem, but with the enormous experience afforded by the war, it was easily shown that this method of treatment should be greatly curtailed and we passed back to the use of our brains and revived the mechanical and anatomical knowledge in the treatment of fractures which, for a time, many of us had lost in our craze to apply a plate."

The patient's general health should first receive most careful scrutiny and attention. It is well to exercise considerable patience with all cases of non-union, before resorting to operative measures. When operative measures become necessary select the simplest possible procedure. Avoid extensive plating. Compound fractures should receive very great care to prevent infection and secure rest to the parts. Exercise every safeguard to preserve the periosteum from damage, especially of the fragments.

Conclusions: Fractures furnish a large percentage of industrial and railroad injuries. Damage suits, workmen's compensation liabilities, as well as malpractice suits, all furnish problems of mutual interest and importance to the employee, employer and the surgeon. The injured should have fully explained in all cases the nature of the injury and the probable outcome. Careful X-ray examination for diagnosis, at the time of the reduction and on discharge of the patient, are essential. A careful case history, including a searching physical examination, blood Wassermann, and urine examination, and progress notes from day to day, are of great importance. The complete record will generally furnish the legal security to all parties concerned. Criticism or discussion which questions the propriety or correctness of former procedures in any fracture case, intended to reach the ears of the injured, may be the source of later damage suits, either against employer or surgeon. It would be wise to fully standardize the treatment of all fractures.

Medico-Legal. Of all fractures occurring in the United States at least 85 per cent have a medico-legal bearing. In the commercial world, including manufacturing industries, at least 60 to 65 per cent of all injuries are attended by fracture of one or more bones. In railroad injuries it is said that the percentage is about 90 per cent, and in serious automobile accidents the percentage may be even greater.

Unless the condition is due to improper surgery, the point will not arise in the ordinary damage suit. The surgeon will testify merely that the disability is permanent and that fact will simply go to increase damages.

If the condition is due to improper surgery and not to the accident, the condition in itself cannot be the basis of recovery from the company unless it is alleged in the pleadings and proved that the surgeon was incompetent and that the company knew he was incompetent when it employed him. However, the latter

case will not occur except where there is no proof of negligence as a proximate cause of the original injury.

If non-union occurs and the company, industrial or railroad, were negligent, then the skill or lack of skill of the surgeon is immaterial. If non-union occurs and it is shown that the company's negligence is not the cause of the accident, then the question of the skill or lack of skill on the part of the surgeon may be pertinent. If plaintiff alleges, and has evidence to support his allegations, that the surgeon was responsible on account of lack of skill and that the company knew or ought to have known that the surgeon was incompetent or careless, then, and in that event, recovery may be had against the company.

The cause of non-union as related to the patient himself is a matter for the jury. An ununited fracture in the law relating to workmen's compensation usually means a permanent disability and large fixed payments. In employer's liability cases and damage suits for malpractice, the amount of the recovery is fixed by the jury.

A patient may take or accept a bad deformity with considerable loss of function as the natural or expected consequence of the injury, but a non-united fracture "will out" and will tell its own genesis, and will not be accepted by the patient as a natural or expected consequence.

Nothing original, nor distinctive is claimed in this resume. The sole object is to bring to your attention a consideration of a most important subject.

SOME PRINCIPLES OF MINOR SURGERY.*

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Introduction.

It is difficult to draw a clear distinction between minor and major surgery. Minor surgery, as considered in this paper, however, will refer particularly to that surgery which may be practiced in the physician's office.

By far the greater amount of attention has been given to major surgery, that branch of the art which, in the present day of large clinics and hospitals, can be practiced satisfactorily and safely only in a hospital. Minor surgery, the less spectacular of the two, has been relegated to the background and its problems left too often to those who are not always familiar with the soundest surgical principles and advances. In the current journals comparatively little appears relative to the problems of minor surgery as such. This seems unfortunate, for, not infrequently, the poorly or unintelligently treated case of a minor character may progress to such a degree of severity that some major surgical procedure becomes necessary and life itself may be endangered. This is especially true of certain cases of infections and malignancies.

In the limited space of this paper I shall attempt to recall to your attention only a few of the more important principles and practices of surgery, minor surgery in particular. Many of them are obvious and rather elementary but are necessary to a discussion of the subject. I shall draw freely from the methods found of greatest value in the conduct of the Out-Patient Surgical Clinic of the University of Virginia Hospital.

General Surgical Principles.

Surgery as we know it today was made possible by the discoveries of Pasteur and the application of this information by Lister. Antisepsis came first and later asepsis. Ochsner defined these words as follows:

"Antisepsis is based upon the knowledge that suppuration and inflammation occur only in the presence of micro-organisms in the tissues involved and upon the supposition that these micro-organisms should be destroyed by the introduction of some substance or combination of substances which has been demonstrated to possess the power of destroying micro-organisms or of inhibiting their growth or their power of reproduction to a sufficient extent to enable the tissues to destroy them.

"Asepsis attempts to accomplish the same result by keeping wounds free from micro-organisms to a sufficient extent to enable the tissue to destroy the very small number which may obtain entrance into the wound, notwithstanding any precautions that may be taken."

As commonly used, the term antisepsis refers to the treatment of infected or potentially infected wounds and asepsis to the management of surgically clean wounds, those usually made by the surgeon.

A thorough knowledge of the uses and limi-

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tations of antiseptics is important. Bacteria present in wounds must be dislodged, destroyed or inhibited but not at the cost of destruction or injury to the tissues harboring them. Destruction of tissue may leave a sloughing surface and defeat the very object of the treatment by preparing a culture medium in which organisms may grow protected and unhampered. Antiseptics, when properly chosen and carefully employed, help the tissues to combat infection and heal themselves. That the healing process is an inherent characteristic of tissue was recognized by the ancients. Stillman in a monograph on Paracelsus quoted: "The nature of the flesh has in it an innate force which heals wounds. Therefore the surgeon should know that it is not he that heals but the force in the body. Therefore, he who can protect and take good care of wounds is a good surgeon."

In aseptic surgery the chief problem is the prevention of infection. Micro-organisms may be introduced in wounds during surgical procedures in two ways. There is air-borne infection and contact infection. One need only glance at a beam of light shining through a darkened room to see the myriads of dust particles floating in the air at all times. Experience has shown, however, that the danger from air-borne infection is small compared to that from contact infection. Rigid technic must be observed in regard to hands, gloves, instruments, dressings, and preparation of the field if the occurrence of infected wounds is to be avoided. Every physician of today provides himself with antiseptic agents and with the necessary equipment for the sterilization of instruments and supplies. Incessant and careful watchfulness, however, is necessary to check the efficiency of these facilities.

An important adjunct to surgical cleanliness is gentleness in handling living tissues. The careless handling and traumatization of wounds kills cells, thereby retarding the healing process and predisposing to infection by forming a culture medium in which bacteria may live and reproduce. Many sluggish and infected wounds may be traced to such roughness or to the aimless mauling of tissue by the operator who dawdles along while he is making up his mind just what to do.

This suggests the necessity of accurate diagnosis of the patient's condition and a thorough knowledge of the principles and technic of surgery. The small lump, the sluggish ulcerated area, or the little mole may not be so simple as superficial appearances would indicate. A careful general examination may reveal serious impairment of a primary or secondary nature or some other information that may change entirely the aspect and conduct of the case.

Finally, the study of all tissue removed by the surgeon offers a very important service and protection to patient and surgeon alike. All tumors, glands, moles and other suspicious tissues should be appropriately preserved, sent to a competent pathologist and examined microscopically.

Anesthesia.

In minor as well as major surgery the selection of an anesthetic is important from the standpoint of both the patient and operator. The patient has a right to protection from the infliction of needless pain, and the operator should not be handicapped by the vocal protestations and physical writhings of a patient who is suffering.

Local anesthesia finds what is possibly its greatest field of usefulness in the management of minor surgical conditions. Novocain, cocain, stovain and other similar drugs may be used in local infiltration, regional blocking or nerve blocking. Sacral, parasacral and spinal anesthesia may be used but are employed chiefly in major surgical procedures.

Local hypodermic infiltration of the tissues with one of two per cent solution of novocain is used more frequently than any other method when clean tissues are to be incised, as, for instance, in the excision of cysts, moles, other small tumors, and so forth. For convenience, the drug may be obtained in tablet form and a fresh solution made up in sterile water each time that it is needed.

When infected areas, such as furuncles, carbuncles and the like are to be dealt with, however, local infiltration of the tissues is not only dangerous but inexcusable. Such infiltration distends the inflamed tissue, predisposes to sloughing and, furthermore, is very apt to spread the infection. For the small infected area that requires incision, "freezing" of the site with the spray from an ethyl chloride cylinder is sometimes sufficient. For the larger lesion, nerve blocking or regional blocking of the area with novocain injections may be

practicable. In the latter method a "ring" of anesthesia is made well away from the infected area, thereby blocking sensory impulses from the circumscribed area. Where the location or character of the lesion makes this inadvisable, general anesthesia is usually necessary.

Of the general anesthetics, nitrous oxide with oxygen is the most useful, if obtainable. Very simple equipment will suffice for the short period of anesthesia generally required. Analgesia rather than anesthesia is preferred. Induction is rapid and recovery speedy. Ethylene is equally useful, though constant care must be taken to prevent explosion. A few whiffs of ethyl chloride may be employed to advantage. Ether and chloroform need no comment other than to say that their effect is more prolonged than is usually necessary and that the use of chloroform is attended with definite danger to certain patients.

Morphine is a most important agent for the relief of pain. Prompt administration of this drug is a godsend to the patient with a severe traumatic injury and in a state of shock.

Management of Clean Cases.

Bearing in mind the general principles of surgery and anesthesia referred to already, I shall consider certain individual problems more in detail. The first is the clean case, that in which the field of operation is presumably clean at the onset and in which strict asepsis must be maintained throughout. The surgeon's hands, gloves, instruments and dressings must be prepared as carefully as for a major surgical procedure. The field of operation should be cleansed with benzine, alcohol, and an appropriate antiseptic agent and then isolated with sterile drapings. Tincture of iodine is a convenient antiseptic for the skin. Its preeminence is challenged by mercurochrome which has the advantage of being less irritating. If the proper solution is employed, it is equally efficacious. It is prepared by dissolving 2 grams of mercurochrome in 35 c.c. of water, adding 55 c.c. of 95 per cent alcohol, mixing and then adding 10 c.c. of acetone. This makes about 100 c.c. of a 2 per cent solution which penetrates the skin much more readily than the aqueous solution.

Incisions should be made with a sharp knife, hemostasis secured carefully, dead spaces avoided and the skin accurately approximated for minimum scar formation. Sterile dry dressings are used. Stitches may be removed from the third to the eighth day depending on the site and character of the wound. In order to guard against secondary infection, stitches should be painted with iodine or mercurochrome before removal.

Management of Potentially Infected Cases.

Under this heading come most of the cases of injury in street and industrial accidents. The injury may be a bruise, hematoma, superficial abrasion, punctured wound, incised wound, lacerated wound, burn, or something more serious, requiring a major surgical procedure ultimately but at the moment in need of first-aid treatment until hospitalization can be secured. Virulent infection or other serious trouble may be averted by careful and intelligent treatment administered promptly.

Careful mechanical cleansing with soap and water is a good preliminary measure in most wounds. The application of novocain solution to wound surfaces is useful in deadening pain. Morphine administered hypodermically is very valuable. Shock may be so slight as to be controlled by having the patient sit with the head well down between the knees. It may be sufficiently great to necessitate the Trendelenburg posture, application of heat externally, stimulation with hypodermics of caffein and adrenalin, enemata of strong coffee, intravenous injection of saline or glucose or even transfusion of blood.

Bruises and hematomas usually respond well to cold applications for twenty-four hours, followed then by warm applications. Prompt draining of a hematoma at the base of a nail may prevent loss of the nail but there is some danger of infection in the devitalized tissue. Superficial abrasions, if relatively clean, may be treated with mercurochrome and dry dressings to promote scab formation. When much soiled, a wet dressing of saturated solution of boric acid for twenty-four hours, followed then by a dry dressing, frequently prevents suppuration.

All wounds after careful cleansing should be searched for foreign bodies, large bleeding vessels, and, if in an extremity, for severed nerves and tendons. Strong antiseptics with consequent devitalization of tissues should be avoided. Milder antiseptics, such as mercurochrome, may be used to advantage. Wet boric acid dressings are valuable in keeping the

tissues soft, promoting drainage and facilitating the removal of dressings the next day. Only in rare instances should sutures entirely close such wounds. Allowance for drainage and swelling should be made. Sutures put in too tightly frequently cut through or cause sloughing.

Punctured wounds should be opened as much as possible, drainage should be instituted, and wet dressings employed for a time. Because of the danger of tetanus infection in such wounds, it is safest to administer tetanus antitoxin routinely. In many cases where the wound is large and tissue destruction widespread, safety is served by administering antitoxin for B. Welchii, the organism responsible for "gas gangrene."

In lacerated wounds, tissue tags should be trimmed away to prevent sloughing. The application of a 2 per cent novocain solution to the wound surfaces is useful to deaden pain. The general measures for the care of wounds already mentioned must be employed with meticulous technic. The dressings best suited to such wounds are usually wet, moistened with a saturated solution of boric acid or magnesium sulphate. The dressing should be changed in twelve or twenty-four hours at the most. After a day or two a dry dressing or one coated with ointment may be used to advantage. In some cases of lacerated wounds, especially fingers and hands crushed or torn by machinery, sterile vaseline makes a very soothing dressing. It obviates the necessity for frequent change and the apparent encapsulation of bacteria by the oily substance seems to render them inert. During the World War the value of Dakin's solution in extensive wounds was strikingly shown. The solution, however, must be freshly prepared and adjacent skin surfaces must be protected from the solution by cloths impregnated with vaseline or some similar oily substance.

Superficial burns may be satisfactorily treated with "carron oil," boric ointment or some similar oily dressing. Deeper burns seem to respond best to the tannic acid treatment devised by Davidson. The area is dressed with sterile dry gauze and the dressing then saturated with a freshly prepared 2.5 per cent solution of tannic acid. Dressings are inspected at intervals of 12, 18 and 24 hours and when the surface has assumed a light brown color the dressings are removed and the burn exposed to the air. Such treatment forms a protective coating over the burned area, prevents the absorption of toxins, and minimizes scar formation. For use about the eyes, a 5 per cent tannic acid ointment of equal parts of vaseline and lanolin is safer but not quite so efficacious.

Management of Infected Wounds and Infections.

The course of an infected wound depends on several factors: the infecting organism and its virulence, the location and size of the wound and the general condition and resistance of the patient. Smears or cultures of the discharges and inquiry into the general health of the patient frequently assist the surgeon greatly. Infected wounds require frequent dressings, free drainage, intelligent antisepsis, and local and general measures to protect and build up the body health.

As in all wounds, there must be careful cleansing and prompt removal of foreign bodies, dead bone and devitalized tissue. Severed nerves or tendons must not be overlooked. Antiseptics, such as mercurochrome, alcohol, picric acid, Dakin's solution, dichloramine-T, iodoform, or aristol may be used to advantage. The 2 per cent solution of mercurochrome, in my experience, is especially valuable.

The warm wet compress is the most satisfactory dressing for the majority of infected wounds. Saturated solutions of magnesium sulphate or boric acid are usually employed. The dressing should be kept damp continuously and warmth retained by the use of a hot water bottle. The wet dressing promotes free drainage, absorbs the discharges well and prevents disagreeable sticking of the dressing to the wound. The dressing should be renewed daily. Prolonged use of wet dressings may be attended with pustulation of the skin about the wound. Frequent and careful inspection will prevent this disagreeable complication.

After the infection clears up and healthy granulations reach the proper level, the wet dressing may be discarded for a dry one and aristol or boric acid powder applied to the wound to promote the formation of a scab. Healing under a clean scab is quite satisfactory and rapid. It is greatly preferable to the granulating wound treated with ointments which keep the wound bathed constantly in its

own secretions and which necessitate frequent dressings. Exposure of a sluggish wound to ultra-violet light frequently hastens the healing process.

The use of general hygienic measures is an important adjunct to the treatment of sluggish and infected wounds. Bettering the general health of the patient will frequently cause great improvement in a wound which runs a discouraging course. Sunshine, fresh air, a high caloric diet and the administration of cod-liver oil are agents which are frequently employed to build up general health.

Time does not permit more than a few generalizations on the treatment of closed infections. The first requisite in the proper handling of such cases is a thorough knowledge of the anatomical structures involved, their relationship to adjacent structures, their function and their lymphatic and vascular drainage. The successful management of closed infections depends on localization of the infection, adequate drainage of the discharge and stimulation of the defense reactions of the patient.

The furuncle, carbuncle, cellulitis and the several varieties of infection of the hand comprise the majority of closed infections with which one has to deal. If the infection is definitely localized, there remains merely the problem of adequate drainage. If the infection is not localized, steps must be taken to promote localization. The most useful means to accomplish this is the use of a warm wet dressing. Magnesium sulphate paste or saturated solutions of magnesium sulphate or boric acid are soothing and usually bring about localization in a few hours,—a few days at the most. Wet dressings serve the same purpose as the old household remedy, the poultice, and are much more cleanly. When localization of the infection occurs and a point of softening or fluctuation can be felt, adequate incision and drainage are indicated.

The furuncle is probably the commonest variety of closed infection. Perhaps the commonest mistake in its treatment is premature incision which causes the infection to spread. After the resistance of the patient has been built up and localization of the infection has occurred, make a careful incision into the infected area. A crucial incision is sometimes advantageous, especially when the skin is thick, as on the neck. After proper incision, the use of a small rubber drain and a wet dressing complete the procedure and in a day or two will usually cause rapid improvement. Assorted sizes of sterilized elastic rubber bands kept in sterile water are very useful as drains. After the use of wet dressings for two or three days, pustulation or unhealthy maceration of adjacent skin may be prevented and better healing encouraged by the use of an ointment such as ichthyol or zinc oxide. If the patient lacks resistance to the infection and healing is unduly retarded, vaccines and general hygienic measures are frequently beneficial. An autogenous vaccine is to be preferred, especially in cases of multiple furunculosis. Fresh air, sunshine, and the administration of cod-liver oil often bring about astonishing improvement.

The carbuncle may be likened to a compound furuncle. There are multiple foci of infection or "cores". In small carbuncles the spontaneous evacuation of these foci frequently occurs with the use of wet dressings alone. For the large or resistant carbuncle, complete excision is occasionally the safest treatment. Roentgen-ray treatment is often very useful. Here again wet dressings are indicated. Care must be taken to look for diabetes or some other systemic disease which, if present, must be treated appropriately. With a carbuncle or other similar infection on the face about the lips there is grave danger to life, especially in those cases in which premature incision has caused the infection to spread. Cerebral sinus thrombosis is a dreaded complication. Recently Roeder, of Omaha, and Bailey, of England, advised ligation of the angular vein at the bridge of the nose on the affected side.

Cellulitis represents a more diffuse infection and one which is sometimes difficult to localize. The resistance of the patient must be carefully stimulated. Warm wet dressings of saturated solution of magnesium sulphate seem to give the best results in reducing lymphangitis, promoting localized softening and relieving pain. When a softened or fluctuant area can be found, adequate incision should be made and warm wet dressings continued in order to promote drainage. Archer and others reported good results from exposure of such incised infections to the roentgen ray in small doses. Such treatment was followed by very copious drainage from the incisions and a marked reduction in the amount of induration and swelling.

Infections of the hand cannot be considered in more than a very incomplete and cursory

fashion in the limited space of this paper. Kanavel's book on the subject is an authority. Auchincloss' chapter on the hand in a recent work on Surgery is excellent and is profusely illustrated. Hertzler and Chesky, in their recent book, give very helpful discussions of this and many other problems of minor surgery.

The finger-end is a frequent site of infection. At the tip the bone, periosteum, subcutaneous tissue and corium are so intimately fused that an infection here readily involves all the structures. Infections about the nail are common. The first of these is the eponychium. It is treated by pushing back the cuticle or incising it to open the pocket at the base of the nail. Care must be exercised to avoid injury to the matrix of the nail which may cause a cleft nail. Another similar infection, the paronychium at the side of the nail, may be treated in the same way. The subungual abscess should be opened with an adequate transverse incision, avoiding injury to the nail matrix but removing that portion of the nail forming the roof of the abscess.

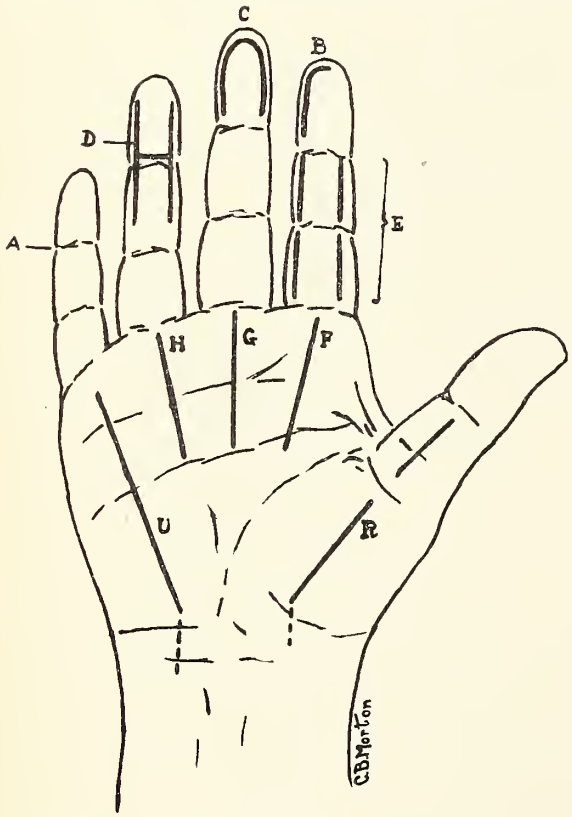

Fig. 1.

A. Flexion crease.
B. Hockey stick incision for finger-end infection.
C. Horseshoe incision for finger-end infection.
D. H-shaped incision for distal and middle closed-space infection.
E. Bilateral incisions for tendon-sheath infection.
F., G., H. Palmar incisions for tendon-sheath infections, index, middle and ringe fingers.
R. Incision for radial bursitis.
U. Incision for ulnar bursitis.

Infections of the palmar aspect of the finger-end may be superficial or deep. The simple pus blister under the epidermis should be treated by trimming away all the roof of the blister. If the infection is deeper a hockey stick or horseshoe incision should be made (Fig. 1). Still deeper infections of the anterior closed space, commonly called "felons," should be opened in the same way and adequate drainage secured in all cases. With inadequate incision of finger-end infections, extensive osteomyelitis may occur, drainage is prolonged, granulation exuberant and healing delayed. Disfiguring and handicapping deformities may follow.

Superficial infection about the flexion creases and the proximal closed spaces should be incised with care in order to avoid entering and infecting the flexor tendon sheaths which lie very close to the surface at the flexion creases.

Incisions for finger joint infections are made in the mid-dorsal plane and bilaterally along each dorso-lateral aspect. Active motion should be started early and drainage effected with as little trauma as possible.

Dorsal subcutaneous infections frequently resemble carbuncles. Free incision early in their course is the treatment of choice. Crucial incisions relieve tension and promote free drainage.

Web-infections of the hand may be very serious and, if not adequately drained, tend to spread extensively along the tendon sheaths, fascia, vessels and other structures. Differentiation between web-abscess extensions and tendon-sheath infections may be difficult. Because of the importance of early incision for infection in a tendon sheath it may be wise to explore the tendon sheath with careful asepsis at a distance from the infection in order to make certain.

Thenar and mid-palmar-space abscesses may be difficult to recognize, especially if they be present with an infection of the radial or ulnar bursa. If these latter structures are involved, signs usually may be found in the tendon sheaths of the thumb and little finger. Careful incision and methodical exploration will reveal the condition.

Suppurative teno-synovitis should be opened at once. Auchincloss says: "Far better is it

to open a few tendon sheaths too early than one too late." Adherent tendons and stiff fingers may be avoided by prompt and painstaking action. Bilateral incisions are probably safest. Drainage should be free and unobstructed. Drains should be made of soft material, such as thin rubber protective tissue or silk, and should not actually enter the tendon sheath or touch the tendon.

Diffuse cellulitis, lymphangitis, and phlebitis of the fingers and hand are rather similar to such infections elsewhere. Elevation of the part and the use of warm wet dressings are helpful in promoting localization. As in all such infections, operative procedure until localization has taken place is now universally condemned.

The treatment of infections of the hand may be summed up under drainage and post-operative care. Drainage must be free. Materials for drains must be soft and of the proper shape and size. They must be so placed as to avoid blocking the wound or producing pressure necrosis. They should be removed at the earliest possible moment after their mission is fulfilled.

Post-operative treatment in general consists in elevation of the part, loose and non-constricting dressings, moist heat by fomentations or actual immersion, early removal of drains and encouragement in carrying on active motion. Once the principles of these infections are understood, each physician may develop his own technic with success.

Summary.

An attempt has been made to deal with some of the more important principles of minor surgery. The discussion was limited as far as possible to those problems which may be encountered by the general practitioner in his office or in the home and which may be solved in most cases without subjecting the patient to hospitalization.

The general principles of antiseptic and aseptic surgery and local and general anesthesia were outlined. The conduct of the clean case was considered briefly. The management of potentially infected and frankly infected wounds was described at greater length. Closed infections were considered from an anatomic standpoint and certain cautions to be observed in treating them were emphasized. Infections of the hand were given especial prominence.

Bibliography.

1. Archer, V. W.: The Roentgen Ray Treatment of Subacute Infections. *Va. Med. Monthly*, 1927, LIII, (Jan.)
2. Auchincloss, H.: Surgery of the Hand. Nelson Loose Leaf Living Surgery. New York, Thomas Nelson and Sons, 1928. Vol. III, Chap. V, pp. 459-561.
3. Bailey, H.: Ligature of the Angular Vein as a Preventive Measure in Facial Carbuncle. *Surg., Gyn. and Obst.*, 1928, XLVI, 565-567.
4. Davidson, E. C.: Tannic Acid in the Treatment of Burns. *Surg., Gyn. and Obst.*, 1925, XLI, 202.
5. Hertzler, A. E., and Chesky, V. E.: Minor Surgery. St. Louis, C. V. Mosby, Co., 1927, pg. 568.
6. Kanavel: Infections of the Hand. Philadelphia, Lea and Febiger, 1925.
7. Martin, Walton: Surgical Infections. Nelson Loose Leaf Living Surgery. New York, Thomas Nelson and Sons, 1928, Vol. I, Chap. V, pp. 367-475.
8. Ochsner, A. J.: Surgical Diagnosis and Treatment. Philadelphia, Lea and Febiger, 1920, 4 Vols.
9. Roeder, C. A.: Ligation of the Angular Vein in Infections of the Upper Lip. *Jour. Amer. Med. Assn.*, 1928, XC, 272-273.
10. Stillman, J. M.: Theophrastus Bombastus von Hohenheim called Paracelsus; His Personality and Influence as Physician, Chemist and Reformer. Chicago, 1920, Open Court Pub. Co., pg. 184.

THE LAST WORD IN SURGICAL TONSILLECTOMY INCLUDING DIATHERMY OR ELECTRO-COAGULATION.*

By SAMUEL R. SKILLERN, Jr., M. D., Assistant Professor Laryngology, Graduate School of Med., University of Pennsylvania, Philadelphia, Penn.

Mr. President, Members of the Virginia Laryngological Society and Guests:

I am not going to bore you by reviewing all of the older methods of removing the tonsils, from the days of the guillotine, through the finger, the blunt and sharp instrument dissection, and the wire snare, to the present day use of the Sluder and LaForce instruments,—but rather confine my remarks to the technique as followed by the Skillern Clinic of the University of Pennsylvania Graduate School of Medicine. As the procedure is the same for private or ward cases, I shall start with the examination, be it either in the office or outpatient department.

How many of our fellow physicians, outside of our specialty, know how to examine a tonsil, and, after examination, how to interpret their findings? There are still a goodly number who, looking into the throat and failing

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to see the tonsils sticking out of their fossae like sore thumbs, say, "tonsils negative!" Whereas, in reality, these buried, cryptic, infected tonsils, well covered by the plica tonsillaris and the anterior pillar, are by far the worst type we have to deal with, both from their general systemic infection and their removal. If those men who pass these tonsils would only look at the inflamed anterior pillars and stop to consider what may be causing this inflammation,—then pull the anterior pillar gently forward, at the same time pressing the tonsil inward and forward out of its bed,—they would find a tonsil of the small atrophic or large buried type, with wide open crypts spewing particles of food, tonsillar debris and, often times, free pus. If a sterile platinum loop is carefully inserted to the base of one of these crypts and a culture made on blood agar and another in bouillon, a growth of the offending organism may be obtained for diagnostic purposes, as well as a future autogenous vaccine. We have found from numerous cultures that the anterior pillar which shows acute inflammation at its edge, the redness extending outwards to end in a sharp line of demarcation, is usually due to a streptococcal infection, whereas, if the inflammation gradually fades out on the anterior pillar, the staphylococcus is found deep down in the tonsillar crypts. A culture from the surface of the tonsil or, in fact, any spot other than as deep down in the crypt as it is possible to get, is as useless as one would be taken from the tongue or any other spot in the mouth,—but I am getting far afield. So, to get back to the patient: Whether it be an adult or a child, he is given a calomel purge with sufficient soda to alkalinize the stomach; this is followed in the morning by a saline cathartic. We do this routinely, as we have found calomel to be almost a specific in acute tonsillar infections and we wish to rid the system of as much infection and toxins as possible, by its action on the liver, bowels and kidneys. The saline purge rids the bowel of the excessive calomel, and at the same time reduces the fluid element of the blood, which tends to reduce bleeding from the adenoids. After a light breakfast, nothing is to be taken by mouth and the patient is instructed to be in the hospital by eleven o'clock.

As all of our operating is done during the afternoon, the interne has time for a brief history and a careful physical examination, and the laboratory a complete urinalysis. We have long since given up the coagulation test as useless.

Unless there is some absolute contra-indication, all of our tonsil cases are done under gas-oxygen-ether anaesthesia, as we believe there is less physical shock and better results (as a whole) than with the use of local anaesthesia. Gas-oxygen induction is given by a professional anaesthetist to all adults and children down to the age of five years; for younger children and infants and for the poorly developed anemic type, anaesthesia is induced by the open drop method, using straight ether. The patient is anaesthetized on the operating table until complete relaxation is obtained, then is wheeled into the operating room, where sterile drapings are applied. We formerly used the electrically lighted mouth gag (a Skillern modification of the Jenning's lock-tight gag) which keeps the operating field constantly bathed in light and allows the assistant to work while the operator is talking or getting another instrument, but the new hospital is equipped with both the large stationary and small portable scialytique lights which, as you know, cast a shadowless light; therefore, we no longer use the Jenning's gag.

After a trial (comparative trial) of all the methods of removing tonsils, we have found that the best all-around results are obtained by the LaForce Method. The entire tonsil, including the so-called capsule, is removed at a single operation,—there is a minimum of trauma to the pillars, little or no hemorrhage at the time of operation, and we have never had a post-operative hemorrhage that required ligation or suturing. Inquiry among the staff has failed to reveal a single instance in twelve years, that the operator has been recalled to check a hemorrhage following a LaForce tonsillectomy.

The LaForce tonsillectomy in our hands gives the maximum result with the minimum amount of trauma and discomfort to the patient and the shortest convalescence.

After the LaForce is applied and the dull-blade screwed down as tightly as possible, the tonsil is cut by the sharp-blade. The heavy dull-blade is allowed to remain on the cut vessels for about three minutes which permits coagulation to occur in these crushed vessels. In this way, the amount of bleeding is generally insignificant,—in fact, as a rule, the

fossae are perfectly dry. When bleeding does occur, we feel that there has been some error or slip up in technique, as a perfect LaForce tonsillectomy should leave the pillars in apposition with a dry fossae in back of them. A great deal depends upon the proper handling of the instrument; we have found in our teachings that when bleeding does occur, it is due to one or both of two main factors, i. e., the dull crushing blade was not screwed down tightly enough or during the time the clamp was on, the instrument had been roughly moved about, either by the anaesthetist in giving more ether, or by one of the operators in keeping the throat dry of secretions with the suction, or else the operator had been careless and rough in the removal of the instrument, thus disturbing the clot in one or more of the cut vessels.

It sometimes occurs that, while the instrument is on, there is a slight bleeding around the dull-blade. We have found that this is usually due to a small vein, running parallel to the long axis of the fossa, which has been cut along its length, thus taking off only the one wall. This vein, of course, cannot contract or retract into the tissue as it would do if cut cleanly across its lumen. When this condition is met, it is a simple matter to pick up the end of this vein with a small pointed hemostat and twist it, thus breaking it across. This procedure is not always necessary; if a small, round sponge about the size of the removed tonsil is carefully placed between the pillars, it will check this hemorrhage in a few minutes. In fact, a rather actively bleeding artery may be checked by this method. If the sponge placed in the tonsillar fossa remains white and dry on the inner side, it shows that it is controlling the bleeding, but, if this sponge becomes saturated with blood and saliva, it must be removed, and a fresh, dry sponge inserted. There is little or no danger of a dry sponge slipping out from between the pillars, once it has been properly placed,—that is, so that the anterior pillar is partly over-lapping and thus holding the sponge *in situ;* whereas, if this sponge become staturated, there is great danger of its slipping into the throat and cutting off the breathing of the patient or being swallowed. When we place this sponge in the fossa, we do not hold it there with pressure, as we believe that this pressure holds the blood out of the cut vessels and prevents clotting, and that when this pressure is removed, bleeding will recur. In fact, after the sponge is inserted, we remove the sponge holder and tongue depressor, and partially close the mouth gag, thus removing all tension from the throat muscles.

In visiting another clinic recently, I saw this procedure carried out with the additional precaution of having a silk ligature tied to the sponge, the end of which was brought out of the mouth, and held by a hemostat. I thought this a very good idea, as it does away with all danger that might occur from this sponge slipping into the throat.

After the dull-blade is screwed down as tightly as possible, the tonsil is at once cut off by the sharp-blade and removed from the throat. We inspect this tonsil carefully to see that the so-called capsule is intact, for, if we find the capsule nicked or if there is a cut edge to the tonsil, we know that a piece of tonsillar tissue has been left in the throat. After the LaForce instrument is removed and the pillars are allowed to separate of their own volition, by retracting the anterior pillar, the fossa is carefully inspected, especially at its base, where at times there will be found, mainly in the adult, a piece of so-called extra-capsular tonsil. This is in reality a piece of lymphoid tissue connecting the lingual tonsil with the faucial. We remove this, as well as any other piece of tonsillar tissue that may be found in the fossa, with the Luc forcep and wire snare. It has been our experience that if this piece of so-called extra-capsular tonsil is allowed to remain, nature, in trying to fill the empty fossae, will cause hypertrophy of this lymphoid tissue, which may grow to attain the size of the original pharyngeal tonsil. It is this hypertrophied tissue, or the failure to remove all vestige of tonsillar tissue with its hypertrophy, that has given the public the idea that tonsils recur after their removal. Many men hesitate to remove this piece of lymphoid tissue, as it contains the inferior tonsillar branch of the lingual, and rather severe bleeding often occurs with its removal. This hemorrhage can be usually controlled with a dry sponge; if not, one suture will control it immediately. A final inspection is made of the throat for any bleeding area, as it is a rule of the Skillern Clinic to let no patient leave the operating table until all hemorrhage is controlled. The patient is placed on the

stretcher face downward, so that any vomitus or any secretions coming into the mouth will run out, and not be inhaled: he is then covered with a hot blanket, and sent to his bed, to be placed in the same prone position until out of the anaesthetic. We are glad to say that lung abscesses are unknown to this Clinic, and, to our knowledge, the same may be said for pneumonias following tonsillectomies.

When the patient is fully out of his anaesthesia, he may be allowed as much cold water as desired. If vomiting occurs, especially if it is persistent, a dram of soda bicarbonate dissolved in six or eight ounces of water is given. This does two things—washes out the stomach and gives the patient something to vomit, thus stopping the wrenching that so often occurs with an empty stomach, and neutralizes the acidity of the stomach. When the patient is able to retain water, it is followed by a liquid diet, returning to a full diet as soon as possible, usually on the third day. Most patients find that a neck ice-cap is comforting. Sleep is induced the first night with the aid of two or three adalin-luminal tablets, and on the following day an aspirin gargle of about two and a half grains to the ounce of water is advised. At the end of twenty-four hours, the patient is discharged and given a prescription for Hancock's Cocanilid, or some other suitable lozenges.

For those cases in which we are unable to use a general anaesthetic, the same procedure may be followed after the injection behind the tonsils of our local anaesthesia, namely, 2 per cent novocain. From this paper it sounds as though all of our tonsillectomies are LaForce procedure, but experience has taught us that there are a certain number of cases—about 3 per cent—in which it is impossible to apply the LaForce instrument, generally due to the tonsils being bound down tightly by numerous adhesions either from old attacks of quinzy or other forms of tonsillitis, and to previous incomplete surgical intervention. In these types of cases, we fall back on dissection with a sharp knife and the wire snare.

Now, what is the method for those cases who fear a general or local anaesthesia,—who have an abhorrence of operation, or, due to their age or some pathological condition, would be extremely poor surgical risks?

Within the last few years, several new methods for the removal of tonsils have been devised for these types of cases, among them being fulguration, desiccation and coagulation. Fulguration is the destruction of tissue by the playing of high-frequency sparks upon the part to be destroyed by superficial action, and is the least adaptable for the removal of tonsillar tissue. Desiccation is the effect of the unipolar current which brings about the evaporation of the fluid elements of the cells, leaving the treated tissue in a dehydrated condition, such as a state of mummification. This can be brought about by burying the needle in the tissue instead of playing high-frequency sparks upon the surface of the tissue. In both of these methods, high voltage and low milliamperage are necessary. Coagulation is the exact opposite of these two methods, and is accomplished by the heavy amperage and low voltage of the bi-polar D'Arsonval current being converted into destructive heat within the tissue, by the resistance of the tissue to the tremendously rapid-moving current, and is concentrated about the point of the active electrode, coagulating the protoplasmic and cellular structures. At this time, my research work has justified my preference for coagulation in selective adult cases, although occasionally I employ the more superficial action of the desiccation current for the removal of tonsillar tabs, and it is here, with an explanation of electro-coagulation in selective cases, that I shall close this paper. While I regard the use of coagulation as an entirely safe and commendable procedure when complications render the usual radical method contra-indicated, yet the use of this destructive element is not without grave dangers, and requires as much skill and knowledge of the part, as would be required in the orthodox surgical procedure. This method is employed without the necessity of injecting local anaesthesia, is without shock to the patient, and causes little or no post-operative reaction, i. e., hemorrhage, edema, extreme soreness of the throat or any of the other complications that may follow the usual surgical removal. It is a most satisfactory method for cases accompanied by serious involvement of the heart, lungs and kidneys, and for hemophiliacs, acute syphilitics, and the aged, as well as for that tremendous number of adults who refuse surgery, and yet are in dire need of the removal of this seat of infection. If electro-coagulation is explained to this latter

type of cases, it usually receives an extremely happy welcome.

In my clinical work at the Post-Graduate Hospital of the University of Pennsylvania, I removed a number of partially coagulated tonsils. In those cases that had received two or more treatments, I found that the heat necessary to destroy the tonsillar tissue had, to all appearances, destroyed the infecting organisms within the depths of the crypts. The bi-section of the coagulated tonsil showed the cells below the destructive line presented a normal picture, and it was also gratifying to note the constitutional improvement in these cases after the second treatment.

Technic

The machine employed for this type of work must be of correct design as to voltage, milliamperage, oscillations and their relationship to one another. This is essential for the duplication of results and insures an ideal procedure free from irritation and practically painless. The machine is prepared for operating by taking a "dead short" across the low voltage terminals and opening up the spark-gaps to produce the required milliamperage. I use a 3,000 milliampere reading on the meter with the spark-gaps barely open, which gives me a reading of approximately 350 milliamperes when the patient is in circuit. Having procured the proper setting, a piece of block-tin (about 70 square in.) is placed on the patient's bare skin in the upper dorsal region and made to conform to the normal contours. One side of the low voltage terminal of the machine is connected to this indifferent electrode by means of a flexible insulated cord, while the other terminal is connected to a rubber insulated needle-holder, and we are ready to proceed.

Since this is an office procedure, the patient is comfortably seated in either a wood or metal chair. The tonsil is then anaesthetized according to individual preference or requirements, eliminating infiltration into the tonsillar tissue directly, since added liquid causes too much diffusion of heat. Personally, since I favor coagulation of the tonsil over a period of sittings, I have found little need for anything more than a spray of 1 per cent cocain solution, to be followed by 7 or 8 topical applications of a 10 per cent cocain solution over a period of four or five minutes, chiefly to the tonsil, with one application to the base of the tongue, uvula, soft palate and side of cheek.

The foot-switch control should be in an easily accessible position. A needle-holder supporting a specially prepared needle, curved about 45 degrees to about one-quarter inch from its distal end, and which is insulated by a piece of rubber tubing down to the point of curvature. The tongue is then depressed with a spatula, and the needle buried into the tonsil about one-quarter of an inch. After a slight amount of traction, the current is turned on by pressing the foot-switch, and is held on until a greyish area appears around the needle at the point of insertion, which should come about in less than a second. Then the foot-switch is released, the needle withdrawn, and a new contact made. Six to ten contacts are taken at various points and depths according to the size of the tonsil and the amount of destruction desired at one sitting. The other tonsil may then be treated in the same manner.

In my private practice, I treat one tonsil at a sitting. In a week, the patient returns for a treatment of the other tonsil, at which time the slough of the tonsil first treated has dissolved, and approximately a quarter of the tonsillar tissue has disappeared.

Following each sitting, the patient is instructed to use an aspirin gargle, and I find this sufficient to combat all the after-soreness, which rarely interferes with eating, or the daily occupation.

By carefully following this technique, and with usual judgment and a definite respect for the powerful destructive agent at hand, results of a high order should be procured, leaving pillars clean, preserving the original contours of the throat, and eliminating the tonsil tissue with little or no after-scar. If this technique is followed carefully, there will be no slough, no post-operative hemorrhage, no secondary infection, no troublesome granulations and little or no edema.

Precautions

It seems imperative to call your attention to the value of witnessing this procedure in all its phases as performed by one adept in all stages of its application, not once, but many times, and also to caution you against the indiscriminate use of antiquated equipment, im-

properly designed and totally unfit for this class of work.

The tendency of the novice is to over-coagulate, and this must be guarded against most strenuously, since it is certain to defeat the good results this method will accomplish. The best rule to follow is to merely carry coagulation to where the area around the point of the needle insertion begins to change in color. Coagulation carried to the point of instantaneous cellular destruction (as will be evidenced by charring) favors the interposing of a scar-formation which will make further enucleation difficult.

Over-coagulation or charring of tonsillar tissue, as you may readily suppose, favors early separation of the slough if the coagulation has extended deep enough, and the walls of the vessels of the neck may be included in this slough—with dire results.

Electro-coagulation is entirely a surgical procedure which can be employed for the successful removal of diseased tonsils in adult cases. With the proper technique, this destructive agent is under definite control at all times, making this type of tonsillectomy a bloodless procedure, with no serious reaction, no shock, and eliminating toxemias. In the presence of certain complications, it is a method deserving the attention of laryngologists, and should be adopted when, for any reason, surgical removal by the LaForce method is impracticable.

1734 *Pine Street.*

LOCAL ANESTHESIA IN SURGERY OF THE EYE, EAR, NOSE AND THROAT.*

By GEORGE G. SNARR, M. D., Winchester, Va.

For the past six years we have been doing the greater part of our surgery under local anesthesia. We do not limit local anesthesia to adults, as the age of our patients has been from ten to seventy-seven years.

So far we have not undertaken an operation under local anesthesia at any age that we were not able to complete successfully. We have had several cases that were very trying to the surgeon and difficult to complete; two of these were nasal operations, and we found the cause to be they were cocain users and were playing for more anesthetic. The other case was a tonsillectomy and her tongue action cannot be described here. However, the operation was completed successfully.

We have heard and read a great deal about selecting your patients for local anestehsia; some say never use it on nervous patients; others say do not attempt it on children, and then we have heard of the importance of studying the individual's psychology for several days before attempting an operation. So far we have not discriminated in selecting our cases for local anesthesia except in children who are on the border-line as possible subjects for local anesthesia. In these cases we do study the psychology, and, after a short examination, we can readily determine if they will be fit subjects for local anesthesia.

There are children who have been taught to fear a physician by thoughtless and indifferent parents by telling them of some inhuman mutilation to get obedience. To undertake an operation on one of these children would be pathetic and calamitous.

We have found the children we have selected, which are the majority of children, and all adults can be operated upon with the greatest of satisfaction both to the patient and the operator. Therefore, we advise all of this class of patients to have a local anesthetic. We do not mean to imply that we do not vacillate at times, for we have patients who absolutely refuse to have a local anesthetic, and we unhesitatingly respect their desire.

Our preference for local anesthesia and to use it consistently is based upon several factors. All things being equal, it is safer. In our community all of the general surgeons do tonsillectomies, mostly under general anesthesia, and we have found that a great deal of our referred work has been referred to us because the patients were physically unfit for a general anesthetic due to some kidney, heart, or lung condition, and a general anesthetic would have endangered their lives. If local anesthesia is the best type of operation for the poor risk, why not be consistent and use it in the good risk? It is true that some fatalities have been reported by the Committee on Local Anesthesia of the American Medical Association, and, if the poor risks are the majority of local operations, we should expect a higher mortality than we have with general anesthetic. Regardless of the anesthetic, if a physician operates frequently and for

*Read before the Medical Association of the Valley of Virginia, at Harrisonburg, Va., May 31, 1928.

a long period of time, he will have fatalities in spite of every precaution he may take.

We believe some of the deaths under local anesthesia were due to a mistake of using a toxic instead of a non-toxic preparation by not reading the labels properly. It has been our practice to have the nurse show us the bottle before putting any solution on the instrument table.

Of course, with local anesthesia your patient will not be subject to ether pneumonia, and, being conscious, is not as likely to aspirate some infectious material as when under a general anesthetic deep enough to abolish the cough reflex; therefore, he is not as apt to develop aspiration pneumonia or lung abscess.

Dr. Thomas McCrae, of Philadelphia, says the day has certainly gone by when any physician who has performed a considerable number of tonsillectomies has the right to state that abscess of the lung has never followed any tonsillectomy that he has done. He suggests that every patient who is discharged following tonsillectomy should be instructed to return at once if there is any evidence of thoracic disease within three months.

It is also believed that many abscesses of the lungs are due to infection by way of the blood stream by infection at the site of operation and the formation and dislodgment of septic thrombi. To the latter our preventive efforts can best be applied under local anesthesia, because, under local anesthesia, the operation must be done with sharp instruments and practically no traumatism and there is comparative quietness of the throat after the operation. Cleanliness is another important factor in preventing these infections.

The fact that tonsil operations are done by many men who are not specialists in this work does not mean that the operation is not one that requires skill and the same cleanliness that is necessary with any other major operation.

We are of the opinion that tonsil operations should not be done by surgeons not specialized in this branch, as the majority of them look upon a tonsillectomy as a minor operation and of little significance. If this came from any laryngologist in this part of the valley other than the reader, it might be credited to jealousy, but he has had the pleasure of doing general surgery in this city (Harrisonburg) rather successfully for eight years, and, if he so desired to repeat, would not fear any hazards in doing so.

Shock is another deciding factor of local anesthesia. We know that under local anesthesia no impulses reach the brain if properly anesthetized, and this will prevent a great amount of shock.

You are reminded of some noted surgeons that inject some local anesthetic into the tissues before operating, even under general anesthesia, so, again, why not be consistent?

Nausea and vomiting are almost always absent after local anesthesia, and we do not mean to imply that it follows every general anesthesia, for it does not, but these are not as consistently absent as with local.

Particularly in tonsillectomies, you have less post-operative hemorrhage, because you have a drier field, better co-operation of your patient as to position, and less instruments in the mouth, making it easier to tie each individual vessel.

We have kept a record of our last 300 tonsillectomies under local anesthesia, ages ranging from ten to seventy-seven, with a post-operative hemorrhage of 1½ per cent, against ninety-five tonsillectomies under a general anesthetic, with a post-operative hemorrhage of 3 per cent. A complete record of this series was kept and the same pre-operative and post-operative measures were used in both classes.

In our mastoid operations, we have had no complaint from our patients n regard to pain, nó unpleasant condition has arisen, and the post-operative progress was very satisfactory.

The same thing may be said of enucleations of the eye and radical sinus operations. Fortunately, we have not had to do many eye enucleations, but the several we did under local anesthesia were very gratifying both to the patients and to us.

Radical sinus operations, and especially the Caldwell-Luc operation on the superior maxillary sinus, are extremely satisfactory under local anesthesia. When doing this operation you encounter, as a rule, a great amount of granulation and polypoid tissue, causing considerable bleeding which accumulates in the back part of the nose and throat: after patients have held this to their capacity, they expectorate it. If these patients were under a general anesthetic, they would undoubtedly aspirate some of this blood containing infectious material and the balance would pass on to the

stomach and intestines where some absorption would probably take place.

Paracentesis of the ear drum is an operation generally done under local anesthesia and is painless if sufficient time is given to the anesthetic.

There are many essential factors necessary to obtain localized anesthesia and to operate after you have produced it.

The surgeon must have absolute control of himself under all conditions that arise. He should be able to anticipate for his patient those things which are apt to cause fear, and to forestall and handle them in such a manner that the patient will be free from anxiety. No doubt some of the failures said to be due to a nervous patient could be attributed to a nervous surgeon if investigated thoroughly.

A surgical assistant accustomed to using a local anesthetic himself and thoroughly acquainted with the operator's method is of greatest value.

The selection of the anesthetic is of no importance except in choosing one that is nontoxic, but the method of applying the anesthetic is important.

We are of the opinion the best way to master this is by practice, carefully noting each time how you apply it and the results until you master it.

110 *N. Braddock Street.*

JAUNDICE IN GAS BACILLUS INFECTION, CLOSTRIDIUM WELCHII.*

By HARRY T. MARSHALL, M. D.,
and
THELMA F. BRUMFIELD, M. D.,
From the Department of Pathology, University of Virginia.

A recent autopsy attracted our attention to the marked jaundice occasionally presented by victims of gas bacillus infection, and two others also reveal the relations between the color and the Welch bacillus.

A patient admitted to the hospital dying after apparent attempted abortion was so deeply jaundiced as to look like a mulatto. The clinical diagnosis rested between acute yellow atrophy and gas bacillus infection. The autopsy performed an hour after death showed deep yellow pigmentation of skin, sclera, and fat. In the subperitoneal tissues of the left pelvic wall there were gas bubbles and crepitus, and smears from this region were heavily loaded with organisms morphologically identical with C. Welchii. There appeared to be a mixed infection, however, since there was an acute diphtheritic endometritis and cystitis, with multiple necroses in the liver. The kidneys and spleen were nearly black in color, all finer details being obscured by the products of blood destruction; the kidney pelvis was filled with bloody urine; and the intima of the blood vessels showed a marked hemolytic staining. However, there was remarkably little destruction of the body tissues, and the general gaseous change seen a few hours after death in these cases was absent.

A second case admitted to the obstetrical service with threatened abortion was delivered of a macerated fetus and placenta positive for gas bacillus. This patient presented distinct jaundice during the first few days in the hospital, with tarry stools and brown cloudy urine, but massive doses of perfringens antitoxin, up to 1 000 c.c. in divided doses, resulted in the disappearance of the features of gas bacillus infection. During the first day or two in the hospital with hematuria, the hemoglobin fell from 65 per cent to 25 per cent, but, following antitoxin and transfusion, the jaundice distinctly reduced and hemoglobin rose to 32 per cent. The patient eventually died of pericarditis, endometritis and early kidney abscesses. At the autopsy, the skin was distinctly yellowish two weeks after the administration of antitoxin. All other evidence of previous gas bacillus infection, however, such as crepitus, hemolysis and tissue destruction, was absent.

In a third case the patient died three days after receiving a bullet wound causing multiple perforations of stomach and intestines. At autopsy there was peritonitis, repaired wounds of the abdominal viscera and an early gas bacillus infection extending out from the edge of the surgical incision in abdominal wall. In this patient, a colored man, jaundice was recognized only in the subcutaneous tissues adjacent to the wound. The local abdomial wall was hemorrhagic, discolored and gangrenous, but there was no general hemolysis nor was there yellow discoloration of the fat. Death was not due to gas bacillus which was only a terminal invader of a patient dying from peritonitis. Death occurred before the characteristic changes of gas bacillus infection had taken place.

*Presented before the University of Virginia Medical Society.

In recent literature the association of gas bacillus infection with jaundice has been noticed in the Australian journals (ref. 1, 2 and 3), and as cause of melena neonatorum (refs. 4, 5 and 6). The darkening or jaundice is apparently due to the development of methemoglobin. Butler (ref. 3) has recently noted bronzing of the skin of gas infection of an abdominal wound and points out the rarity of abdomial wound gas infections.

Summary

Three autopsies are reviewed with reference to the pigmentation, hemolysis, gas formation and tissue destruction of gas bacillus infection. In one, the hemolysis and jaundice was intense, the gas formation and destruction negligible as the autopsy was performed almost at once after death.

In a second case, an active gas bacillus infection was stopped by serum administration but at death from other causes, two weeks later, there was still jaundice of skin and fat, though no evidence of gas bacillus infection.

In a third case dying of general peritonitis with terminal early gas infection, the discoloration was limited to the gas infected edges of an abdominal wound.

References.

1. R. Magaray, J. B. Cleland & J. G. Sleeman—*Med. Jour. of Australia*, Vol. 1, pp. 787-789, 1927.
2. F. H. Beard & J. G. Cleland—*Med. Jour. of Australia*, Vol. 1, pp. 719-720, 1927.
3. Butler—*Annals of Surgery*, Vol. 84, p. 841, 1926.
4. Abstract in *J. A. M. A.*, Vol. 87, p. 1522.
5. Abstract in *J. A. M. A.*, Vol. 87, p. 1599.
6. Abstract in *J. A. M. A.*, Vol. 87, p. 67.

MASSAGE AS A THERAPEUTIC AGENT.*

By M. B. JARMAN, M. D., Hot Springs, Va.

Since the World War much has been said and written about physio-therapy in its various forms. It is one of these physical therapeutic agents about which I have chosen to talk very briefly today. I have chosen this subject, not that I feel I am an authority on it, nor because I have any new knowledge to contribute to it, but simply because I believe massage to be a therapeutic agent of sufficient importance to justify us as practitioners in keeping it in mind,—one which has stood the test of at least five thousand years of use in the treatment of disease, and one which the busy doctor is prone to forget or neglect to prescribe.

Three thousand years before Christ the Chinese had a system of gymnastics and massage. Massage is referred to in the sacred books of the Hindus. The Greeks and Romans placed a great deal of emphasis on its use,—the Greeks in particular having a regular system of combining baths, gymnastics, massage and exposure to air and sunshine.

Nearly four hundred years before Christ, Hippocrates, who is so often referred to as the "Father of Medicine," wrote:

"A physician must be experienced in many things but assuredly also in rubbing * * *" and added a list of results which could be accomplished by rubbing.

Massage was used by the French surgeon, Pare, in the Sixteenth Century—in fact, throughout the history of medicine, many references to its use may be found.

In 1812 the whole system of massage and gymnastics was revived and re-arranged by Peter Ling, of Sweden. He founded a school in Stockholm which continues to the present day to train masseurs. Many of the best masseurs in this country today have received their training in Sweden where so much care is given to the proper training along this line.

In this country, in 1875, Dr. Weir Mitchell made massage an important part of the so-called "Weir Mitchell" treatment of certain types of nervous patients.

More recently massage has become rather extensively used,—sometimes properly, sometimes, perhaps, improperly, in treating a great variety of conditions.

Massage exerts its influence on the tissues in two ways:

I. By mechanical action.

II. By reflex action.

By its mechanical action it may aid the circulation of the blood or the flow of lymph. It may exert tension on some structures which we wish to free or stretch, or it may, by pressure, exert an influence on abdominal viscera.

Massage aids the circulation by aiding the venous return of the blood. This is produced by rubbing or stroking the tissues in the direction of the flow of the venous blood. It affects the flow of lymph in the same way. By pressure, or stretching, newly formed adhesions or connective tissue may be broken down. A great deal has been said, and little

*Read before the Medical Association of the Valley of Virginia, May 31, 1928.

or nothing proved, as to the mechanical effect of massage on the abdominal viscera, but it certainly seems to be of value in causing contraction of the uterus after the third stage of labor. It can also exert an influence in emptying the colon. What it will do for the liver and other abdominal viscera is purely a matter of speculation.

There is some reason for believing that massage may produce an effect by reflex action. It is a matter of experience that we instinctively rub our foreheads or eyes when mentally fatigued and that by so doing we get a sense of relief. This rubbing or stroking is done so gently that the result cannot be explained on the basis of the mechanical effects of the stroking. Furthermore, it is known that certain stimuli to the body surface will produce contraction of the muscles by reflex action. It has been suggested that different types of stimuli might produce the opposite effect by reflex action. Other evidence of the reflex action of massage is that presented by Dr. Lucas-Championniere, who treated recent fractures by the use of gentle massage, thereby securing relief of muscle spasm with the result that he was enabled to reduce the fractures with relative ease.

Massage differs from active exercise of muscles in that it brings about a change in the muscular tissue without causing fatigue, or without effort or exercise of the will on the part of the patient. Pemberton has pointed out evidence which indicates that massage of the muscles is not accompanied by the formation of lactic acid and carbon dioxide as is the case when active exercise of the muscles is indulged in.

I will mention a few conditions, the treatment of which can be aided by the use of massage. No attempt is made to list all of the conditions in which massage is of value, nor is it desired to give the impression that massage is the most important part of the treatment in the conditions listed.

Fractures: The return to normal function of the injured part can be greatly aided and the period of convalescence following fracture can be shortened by the use of massage along with active and passive exercises. The same can be said for sprains and strains. While massage may not be an absolute necessity in the treatment of these injuries, which the general practitioner is so frequently called upon to treat, it is a most valuable aid.

Myositis and Fibrositis: There are many individuals who are suffering discomforts as a result of chronic myositis or fibrositis. Many of the low backaches are due to these conditions. I know of nothing more effective in the local treatment of chronic myositis or fibrositis than the combination of heat and massage. In some cases the results are spectacular.

Arthritis: Marked symptomatic relief may be obtained in many cases of chronic arthritis by the use of heat, massage, and exercise. Until we learn more about the underlying cause or causes of these types of arthritis than we know at present, symptomatic relief is about the best we have to offer in their treatment, and in this connection massage is most valuable.

Paralysis: Massage should be used in most types of paralysis. Of course, it should be remembered, and strongly emphasized, that massage should not be resorted to in the acute stage of infantile paralysis. It should also be remembered that massage of the paralysed part should be gentle massage as contrasted with deep massage, because of the danger of injury to the blood vessels, the walls of which may be involved in the paralysis.

Visceroptosis: Massage of the abdominal muscles is recognized as an aid in the medical treatment of visceroptosis. While it is by no means the most important factor, the treatment would not be complete without it.

Chronic Constipation of the Atonic Type: The treatment of this condition may be aided by the use of massage both by the effect produced on the abdominal muscles and mechanical effect produced on the colon.

Massage, of course, should not be used in acute inflammatory processes, tuberculous lesions, neoplasms, thromboses, and recent injuries to the skin or superficial structures.

Massage should be administered by one trained in its use and only under the direction of the physician familiar with both the local and general condition of the patient.

Enough has been said to remind ourselves that in massage we have a therapeutic agent which through many centuries has proved a valuable aid in the treatment of disease, but, like other agents capable of doing good, it may do harm if improperly used. If kept in mind by physicians and prescribed when indicated,

the result will be an increasing number of satisfied patients,—satisfied because of the results obtained;—if totally forgotten or neglected, the result will be an increasing number of dissatisfied patients and considerable joy and financial profit on the part of some of the "Cultists" who delight in taking advantage of our dissatisfied patients as a means of encroaching more and more into the domain of legitimate medicine.

GONORRHEAL RHEUMATISM.

By EDGAR W. YOUNG, M. D., Petersburg, Va.

Before taking up gonorrheal rheumatism itself, I will stray off and say something about gonorrhea in general.

Gonorrhea should not be passed on as it is by so many doctors as a simple strain, gleet, and as something that is of no importance, and that is not as bad as a bad cold. These various and sundry things that we all hear daily about gonorrhea to my mind are ridiculous and should be so considered by every good thinking doctor. With more serious attention gynecological surgery would be reduced considerably.

Gonorrhea is an acute infection which very often has numerous secondary and systemic manifestations, of which prostatitis and epididymitis, salpingitis, arthritis, synovitis, endocarditis and pericarditis are the most important. Gonorrhea, then, is one of the most widespread and serious of infectious diseases, presenting many features for consideration. It is not a killing disease, as only 39 fatal cases are recorded in the Registrar General's Report, although 1,009 are noted for England and Wales. However, as a cause for ill-health and disability, the gonococcus occupies a position of the very first rank among its fellows. While the local lesions are too often thought to be trifling, in its singular obstinacy, in the possibilities of permanent sexual damage to the individual himself, and still more in the "grisly troop" which may follow in its train, gonorrhea does not fall very short of syphilis in importance.

Complications of gonorrhea may be epididymitis, salpingitis, arthritis, synovitis, vaginitis, endocervicitis, inflammation and abscess formation of the Bartholin glands, ophthalmia neonatorum, metritis, ovaritis, sometimes peritonitis, cystitis, pyelitis, septicemia, pyemia, endocarditis, pericarditis, and iritis.

We are going to consider one complication only, and that is gonorrheal arthritis. Although each of the others are of equal importance, we cannot consider all at this time. Gonorrheal arthritis is one of the most damaging, disabling, and serious of all the complications and occurs in from two to five per cent of the cases. It occurs more frequently in males than in females, and comes on, as a rule, during an acute attack of gonorrhea; however, it may occur as the attack subsides, or even when it has become chronic. A gonorrheal arthritis of great intensity may occur in newly married women who have become infected by an old gonorrhea in the husband. In women it is not always easy to find witness of local infection. As a rule, many joints are affected, and it is peculiar in attacking certain joints which are rarely involved in rheumatic fever, as, for instance, the sterno-clavicular, the intervertebral, the temporo-maxillary and sacro-iliac.

The anatomical changes are variable. The inflammation is often periarticular, and extends along the sheaths of the tendons. When effusion occurs in the joints, it rarely becomes purulent. It has more commonly the character of a synovitis, although about the wrist and hand suppuration sometimes occurs in the sheaths. The gonococcus itself is present in the inflamed joint or in the periarthritic exudate and may often be obtained in pure culture, or as a mixed infection with staphylococci or streptococci.

Variability and obstinacy of the clinical course are the two most distinguishing features.

Following are the most important clinical forms:

Arthralgia: In this condition there are wandering pains about the joints without redness or swelling. These persist for a long time.

Polyarthritis: Several joints become affected in this variety. Fever is slight. Local inflammation may fix itself in one joint, but more commonly several become swollen and tender. In this form cerebral and cardiac complications may occur.

Acute Hydrarthrosis: This is usually mono-articular, and is particularly apt to involve the knee. It comes on without pain, redness or swelling, and formation of pus is rare.

Bursal and synovial forms attack chiefly the tendons and their sheaths, bursae and periosteum.

Painful heel is due in some cases to local periosteal thickenings and exostoses on the os calcis causing pain and great disability.

Symptoms of gonorrheal arthritis are chiefly one joint involvement at the time, as a rule, together with pain, swelling, redness, anorexia and slight fever.

Treatment consists of finding and removing the cause, and treating the gonorrheal condition at the same time you are treating the rheumatism. Put the joint at rest and use hot applications. Opiates for pain are usually required for the first few days. Salicylates, iodides, gonorrheal vaccine, together with free elimination and proper diet should likewise receive consideration.

Dixie Building.

BACTERIOLOGICAL OBSERVATIONS IN ACUTE MENINGITIS.*

By AUBREY H. STRAUS, Richmond, Va.

There is probably no disease in which a rapid and accurate bacteriological diagnosis is of as vital importance to the patient as in acute meningitis. Nor is there any disease in which the full use of our available knowledge is perhaps more often omitted. The reason for this seems to be a feeling on the part of a great many physicians that most meningitis where there is a cloudy spinal fluid is meningococcic and that the few cases due to other organisms such as the pneumococcus, or streptococcus, are going to die anyway.

The early administration of antimeningococcic serum in all cases is undoubtedly justified, but the failure to follow this by a prompt and efficient bacteriological diagnosis is to fail to give the patient the full chance to which he is entitled.

The records for the city of Richmond show only nine deaths from meningococcic meningitis during the last five years, but fifty deaths due to other types, not including tubercular. Of the cases that have come to my attention only 22 per cent have been meningococcic. It therefore seems that the other types of meningitis likewise deserve our serious consideration. A recent article in the Public Health Reports[1] shows meningococcic meningitis to be on the increase, but this has not been felt here as yet. The types of meningitis occurring under different conditions and in different localities differ widely as illustrated by the following table:

Causative Organism	Army Laboratory No.1 Neufchateau, France May, 1918, to Jan., 1919		State and City Laboratory Richmond, Va. June, 1920, to June, 1928	
Meningococcus		39		10*
Influenza bacillus		1		10
Pneumococcus		5		17
Type I	3		6	
Type II	0		1	
Type III	0		1	
Type IV	1		9	
Undetermined	1		0	
Streptococci		1		7
Hemolytic			5	
Non-hemolytic			2	
Staphylococcus Aureus†		1		1
Total		47		45

*Four of these were specimens received by mail and showed only profuse pus, but were probably meningococcic in origin. The meningococcus rapidly autolyzes in the cold while the other organisms do not.

†These cases were both of traumatic origin.

The pneumococci, streptococci, and influenza bacilli seem to be the types of infection on which our attention here should be particularly focused. Everyone of these cases in the above table died and yet in the literature one finds a number of cases of recovery in pneumococcic meningitis and a few in streptocccic. Even assuming incorrect bacteriological findings in some cases, which the faulty methods employed would seem to make highly probable, there are nevertheless a number of recoveries reported. I shall cite only a few of these.

Litchfield[2] reports ten cases treated by Kyes serum, five of which recovered. He makes no statement as to type. He also calls attention to the fact that autopsy findings frequently show the presence of an infection in the meninges where there were no symptoms noted before death.

This observation was also made in my own army experience. In thirty-nine autopsies we found definite meningeal infection in five. These were deaths without symptoms of meningitis. One of these was pneumococcus, Type I, one streptococcus, one meningococcus, one both streptococcus and meningococcus, and one the diphtheria bacillus. In this latter case the diphtheria bacillus was also found in the lungs.

Ratnoff and Litvak[3] describe a case of pneumococcic meningitis believed to be Type III

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which they treated with injections of antipneumococcic serum and Morgenroth's optochin hydrochloride. They believed that the use of this drug greatly increased the efficacy of the serum treatment. They report complete recovery.

Simpson[4] reports a case of pneumococcic meningitis, type undetermined, treated by injections of polyvalent serum with complete recovery.

Harkavy[5] describes a cast of Type I pneumococcus infection treated with specific serum and followed by complete recovery. He also emphasizes the importance of both intraspinal and intracisternal drainage and injection.

Globus and Kasanin[6] report a case of Type IV pneumococcus with complete recovery. The treatment used consisted principally of drainage, subarachnoid drainage being emphasized. These authors also quote seven other cases of reported recoveries in pneumococcic meningitis.

Cases of recovery in streptococcic meningitis are rarer but there are some on record. One of interest was reported by Neal and Jones[7] following scarlet fever. Anti-scarlet streptococcic serum was used and the case showed prompt response with complete recovery. The case was very severe with blockage of the canal.

There seems to have been less accomplished in the treatment of meningitis due to the influenza bacilli. Schnyder and Urech[8] in a review of sixty-three cases report only six recoveries, and most of these were left with permanent defects.

In any event accurate diagnosis is always the first step in the handling of any disease. In this disease with the means of diagnosis available it seems a pity not to utilize them in every case. The laboratories themselves are partly to blame for this, by not doing better work. Mistakes are often made as I have several times personally observed. The recent report of the Public Health Service[1] states this as a fact both in this country and abroad. There is, however, no excuse for this. Any well equipped laboratory with a technician of proper training should experience no difficulty in differentiating any of the organisms apt to be found in spinal fluid.

It is not safe to rely upon staining only, even with the aid of a well made Gram stain, which unfortunately is not always available. Cultural confirmation should always be carried out, and in the case of the pneumococcus the organism should invariably be typed. This can be done within an hour in most cases by the method of Gondolf.[9] I have only had the opportunity to employ this method twice but it has given good results both times. Where this does not work, cultures should be used though they are much slower in giving results. The precipitin test frequently gives immediate results. All of these methods should be available so as to give as quick and accurate a diagnosis as possible. The one thing emphasized in the reports quoted above is the need for an immediate diagnosis.

In the case of undue prevalence of meningococcic meningitis the organisms should be typed and an effort made to get specific serum rather than the usual polyvalent serum. This was found particularly helpful in France during the winter following the Armistice.

In conclusion, I wish to urge a closer cooperation between the laboratory and the physician in handling these cases. The laboratory service should be just as available as the medical service and there should be no time lost between the spinal puncture and the laboratory examination of the fluid.

BIBLIOGRAPHY.

1. *Public Health Reports*, 43:2519, Sept., 1928.
2. Litchfield, *J. A. M. A.*, 72:1345, 1919.
3. Ratnoff and Litvak, *Arch. Pediat.* 43:466, 1926.
4. Simpson, *Lancet*, 1:390, Feb., 1927.
5. Harkavy, *J. A. M. A.*, 90:597, Feb. 25, 1928.
6. Globus and Kasanin, *J. A. M. A.*, 90:599, Feb. 25, 1928.
7. Neal and Jones, *Arch. Pediat.*, 44:395, June, 1927.
8. Schnyder and Urech, Abs. *J. A. M. A.*, 85:552, Aug. 15, 1925.
9. Gondolf, *Proc. Soc. Exp. Biol. & Med.*, 24:295, Jan., 1927.

617 *West Grace Street.*

Analyses, Selections, Etc.

FRAUDS AND QUACKERY IN MEDICINE.*

By MORRIS FISHBEIN, M. D., Chicago, Ill.

Editor, Journal American Medical Association.

Dr. Fishbein said he would speak of faith healing in its scientific aspects only. The difference between scientific medicine and faith healing he described by the parallel case of the

*Abstract of address to the profession and public at the fifty-ninth annual meeting of the Medical Society of Virginia, in Danville, October 17, 1928.

black cat that is not in the cellar: the philosopher looks for it, but the theologian finds it.

There are three things in which every man is naturally credulous, he said: money, matrimony and medicine. Of these credulities, that in regard to medicine is the only one of which the results may be permanently harmful.

Charlatanry, he pointed out, is not peculiar to medicine but has its exponents in the law and the ministry as well. (He remarked here that certain supposed ministers were said to obtain their results by perspiration rather than by inspiration.) He described the charlatan as a man of great personal appeal who uses his personality primarily in getting results, who realizes that he does not possess the powers that he claims. Charlatanism is often connected with a "divine call."

The medicine of today, he said, rose out of the faith healing of the Jews and the Aramaic peoples and the Greeks. Hippocrates observed the tendency of sick tissues to get well. The scientific man, realizing this, says only that he did what he could and the patient got well. The charlatan says, "I cured the patient."

After the time of the great Greeks came the dark ages of medicine; then the great anatomists with their recognition of the fact that one had to know the human body.

There was no great practitioner of the art of healing by suggestion until the German, Friedrich Anton Mesmer. Then came John Graham who called himself "Servant of the Lord, O. W. L.," the initials standing for "Oh, Wonderful Love." Mrs. Mapp might be said to have been the "Bonesetter Reese" of 1784. She held sway for two years. Next appeared Bishop Berkeley and his tar water.

About this time Benjamin Franklin's discovery of electricity had its influence on medical quackery. The first great American quack was Elisha Perkins who invented the so-called metallic tractors. They were electrodes which were to be drawn downward over the body, never upward. For these he charged five dollars a set. They were sold by testimonials, the great selling agent for all forms of fraudulent medical devices. (Testimonials can be purchased, particularly for cosmetic preparations, for prices varying directly with the prestige of the testifier.)

At the time of Mesmer (c. 1800) Paris was the great center of faith healing and it was there that he built his Temple of Animal Magnetism, as mesmerism was called.

Disciples were soon found in the United States. At Belfast, Maine, Phineas Parker Quimby started the practice of mental healing.

In 1822 Mary Baker was born. She was an imaginative, spoiled child. Soon after her first marriage she developed a sort of illusion of childhood and insisted on being rocked to sleep. The first husband died in a few years. Her second husband she divorced while he was in a prison camp during the Civil War. About this time she received what she thought was a spinal injury, in falling. She heard of the faith healing of Quimby and went to him to be treated. He cured her in two treatments.

Dr. Fishbein illustrated the possibility of such a cure by the case of a girl in Hamilton, Ontario, who was supposedly suffering from paralysis, and whom Dr. Sippy, of Chicago, was called to see. He determined on examination that there was no actual paralysis and in a few minutes was able to walk out of the sickroom with the patient accompanying him. It was merely a scientific diagnosis of hysterical paralysis.

Quimby wrote a book on mind healing, of which the manuscript is still preserved and from which Mary Baker Eddy's book, "Science and Health with a Key to the Scriptures," was obviously derived. It contains all of Quimby's points. After her experience with Quimby, Mary Baker went to Boston and set herself up as a mind healer. In a few years she married her third husband and when he died, not long after, she asserted that the cause of his death was "malicious animal magnetism." Postmortem examination, however, revealed the presence of endocarditis and myocarditis. She then associated with herself a sort of general manager who lasted ten years. Meanwhile, she had become extremely wealthy through the promotion of Christian Science and when she died she left a trust fund for the propagation of her creed.

Dr. Fishbein pointed out that there are a great many things about Christian Science that need not be taken especially seriously; but that when an adult permits a child, who is not his property but his sacred trust, to strangle of diphtheria without bringing the aid which would save its life, that should be taken seriously.

It is unfortunately quite possible in this country to create permanent trusts for anti-social purposes.

In this country today there are thirty-seven systems of mind healing embracing about 10,000,000 people. The names of most of these systems are associated in some manner with the word "science."

The beginning of osteopathy occurred when Dr. Andrew Still conceived his idea of the importance of vertebrae to the human welfare. He traveled about preaching his creed in many towns but was not favorably received until he found what he called "the Athens of America," Kirksville, Missouri, in 1872.

It was only in 1879 that Pasteur offered proof that specific germs were associated with different diseases. From this date all modern medical science advanced so rapidly that it became difficult to qualify for the practice of medicine, and charlatans found it necessary to "get in through the back door." It was under these circumstances that osteopathy got its start. The osteopath of today now contends that many diseases of man arise from pressure of the bones upon the spinal nerves but also that he restores all tissues to their harmonious relationships. The osteopathic course has increased from its rude beginnings until now it requires a high school background and about four years of study.

The laws of the various states differ with respect to the rights of reputable physicians and healers of various sorts. In California the osteopath is placed on an equal footing with physicians graduated from accepted medical colleges.

Dr. Fishbein said that if the osteopath "comes in through the back door," then the chiropractor "comes in through the basement." While the man who enters your house by the back door may be presentable, the one who comes through the basement is apt to be much begrimed and to carry a crowbar. Chiropractic was invented by D. D. Palmer, a practitioner of animal magnetism. It is a sort of hybrid between osteopathy and mental healing. An osteopath said that the course in chiropractic is practically the first three weeks of the course in osteopathy. The chiropractic system is founded on the idea that all disease is caused by pressure of the bones of the spine on the spinal nerves. This particular displacement of the vertebrae they call "subluxation," a phenomenon which does not actually exist. B. J. Palmer, the son of the originator of chiropractic, and the present head of the school, is a remarkable salesman. He instituted the "meal ticket" system of collecting fees, the "nonreturnable kimona" and the "neuro-calometer." He has built up a magnificent organization. He advertises over radio station WOC at Davenport, Iowa. (Newspapers are becoming more and more particular about the type of advertising matter they will accept for their pages, but the radio has not yet reached the stage of developing ethical standards.) At his home in Davenport he has a "Garden of St. Peter" to which persons are admitted for ten cents. Here he has a large spine collection which includes among other things the spine of a boa constrictor. There is also a library which, when finally opened at the request of an investigator, was found to contain "The Ladies' Home Journal," "The Woman's Home Companion," and "True Detective Stories." B. J. Palmer is the inventor of many slogans which are used in advertising his creed.

Ten years ago the school of chiropractic flourished with 3,000 students; last November it contained about 300; it is obviously on the decline.

Albert Abrams was the greatest medical quack. He had a good medical education but perverted it to ill use. His first departure was "spondylotherapy," the idea of which was to cure by pounding the spine with a rubber-tipped hammer. At this time everyone became interested in wireless telegraphy and the development of electricity, so Abrams turned to his "electronic diagnosis and therapy." His machine consists of many intricate connections and wires to which there is no scientific order at all. The system is supported by such leaders of the "intelligentsia" as Upton Sinclair. Abrams died after four years of exploitation of this method, leaving an estate of millions of dollars. His machines were leased by him, not sold, but his courses of instruction were sold. His fortune also came from his school, his journal and many other sources. When he died there were possibly 2,000 practitioners of his system in this country, but now there are less than 100. He left a portion of his great fortune to found a college of electronic diagnosis and therapy in San Francisco. The college closed about three months ago and the

building was found to have been constructed so that it would be suitable for use as a hotel.

The two developments out of the Abrams school were the Palmer thermopile arrangement which registers when placed upon the skin (thus, supposedly, indicating the seat of the disease), called a neuro-calometer, which sold for $3500, and the Wilshire Ionaco. This instrument consists of coils of wire. The virtue claimed for it is that it will cure a patient of any chronic disease if hung around his neck. It is supposed to magnetize the iron in the blood. Dr. Fishbein likened the possibility of accomplishing such a feat to the possibility of picking up spinach with a magnet. This device is advertised over the radio station WCFL ("the voice of labor") in Chicago. It has been dubbed the "magic horse-collar."

Another quackery exisiting today is the concern in New York City which sells a system of saving hair. It offers to diagnose hair conditions by examining hairs, sent through the mail, under the microscope. The Bureau of Investigation of the American Medical Association sent for diagnosis some hairs from fur coats and from the head of a girl who was obviously not suffering from any fault of the hair, and twine dyed to look like hair. In each case was returned the diagnosis of malnutrition of the hair roots, with recommendation of treatment with their nostrum.

There are also going about now various perversions of the scientific use of diet in the prevention and control of disease. Each emphasizes its own special point, such, for instance, as never mixing proteins and carbohydrates in the digestive system, never mixing acids and alkalis, and so forth. These systems also are advertised over the radio, with such slogans as,

"The more sugar you soak, the sooner you'll croak."

"The whiter your bread, the sooner you're dead."

"Good night, sleep tight, don't let the bed-bugs bite or you'll get small pox."

There are many lights, wires and radium devices for healing, as well as numerous glandular mixtures which were evolved soon after the discovery of the efficacy of thyroxin and other glandular extracts for treatment of certain conditions.

Another creed, so-called "naturopathy," is sponsored by Bernarr McFadden, notorious publisher of "Physical Culture" magazine. Its peculiarity is the avoidance of drugs, surgeons and other aids to therapeutics which it deems "unnatural." Eugene Debs went to the sanatorium near Chicago which treats by its methods and died a victim of its ignorance, and its treatment by starvation diet.

The cults come and go. The one charlatan who should concern us greatly is the licensed physician who disgraces the good name of medicine by fraudulent practice. Such are the "plastic" or beauty surgeons, following in the wake of the splendid results attained by reconstruction surgery during the World War. The most notorious of these at the present time is H. J. Schireson, of Chicago, who, Dr. Fishbein said, has spent at least as much time in prison as in medical school.

P. T. Barnum said there is born in the United States a sucker every minute. Joseph Jastrow remarked that a crook is born every hour to take advantage of sixty suckers. The ratio is not likely to change in the future even with the birth of a great many eugenic babies.

Roentgenology

Roentgen-Ray Diagnosis

LEOPOLD JACHES, M. D., Radiologist, Mt. Sinai Hospital, New York City.

(*Continued from page* 660)

The Mediastinum.—Of the pathologic conditions occurring in the mediastinum, an enlarged substernal thyroid, a persistent thymus, enlarged glands of tuberculosis or Hodgkin's disease, and tumors, are the most important. The enlarged thyroid, when it extends into the chest, will be seen as a dense mass in the paravertebral portion, compressing the trachea or displacing it to one side. The persistent thymus appears as a broad band above the heart. One should be on guard, however, not to mistake the broadening of the mediastinal shadow, which occurs during expiration or while the crying child holds its breath, for an enlarged thymus. Tuberculous mediastinal glands are generally denser and sometimes partially calcified. The glands of Hodgkin's disease are, as a rule, more lobulated. Frequently it is impossible, roentgenologically, to differentiate between these conditions.

Tumors of the mediastinum are more frequently malignant than benign. Of the latter,

cysts are seen most often; of the former, lymphosarcomas. Differentiation between the two varieties is often difficult; as a point of distinction it may be stated that the malignant types have a tendency to be lobulated.

Aneurysm.—Of equal difficulty and importance is the differentiation between tumor and aortic aneurysm. Fluoroscopy may sometimes be of assistance, as aneurysms are apt to show pulsation while tumors will not. But often transmitted pulsation of a tumor will simulate an aneurysm, or a thick-walled aneurysm will not pulsate at all. Occasionally it is possible by fluoroscopy in oblique directions to separate the tumor from the aorta and thus discover the true nature of the shadow.

Aortic aneurysm is best studied fluoroscopically. If the ascending aorta is involved there is a convex shadow to the right of the spine which becomes accentuated when the patient is observed in the second oblique position; i. e., the left side of the chest to the screen, the right toward the tube. Aneurysm of the descending aorta will show a widening of its shadow to the left and, in the first oblique position, it will be seen to encroach on the posterior mediastinum. Aneurysm of the arch is best seen postero-anteriorly as a large spherical shadow above that of the heart. In the first oblique position its encroachment on the posterior mediastinum and, if the patient swallows a barium mixture during the observation, the degree of pressure on the esophagus, if any, can be determined. In this position one can in extreme cases study the erosion of the thoracic vertebrae in this area.

Syphilitic aortitis is shown as a widening of the ascending portion just above the heart. Like aneurysm of the ascending aorta, it is best seen in the second oblique position.

In arteriosclerosis the aorta seems widened, sometimes it is tortuous, and frequently calcified plaques can be seen in the descending portion of the arch.

The Heart.—In the cardiovascular shadow the following points are to be noted: On the right side there is a curve above the diaphragm representing the right auricle; above it is a nearly straight line representing the superior vena cava; on the left side there are, from above downward, the descending portion of the aortic arch, the pulmonary artery, the left auricle (often not clearly visible), and the left ventricle.

The position of the heart and, consequently, its apparent shape are affected by the stature of the patient. In tall, thin persons in whom the diaphragm is low, it is nearly vertical and, in extreme cases, presents the so-called drop heart. In stout persons with much intra-abdominal fat, the heart is raised and rotated on its long axis and is situated more or less transversely. In unilateral elevation of the diaphragm from whatever cause, it is generally displaced to the opposite side. Deformity of the chest, such as kyphoscoliosis, also causes marked displacement of the heart.

The size of the heart, unless there is marked enlargement, is not of great importance, save for comparison at different times in the same individual. Actual change in shape, however, denotes an organic lesion.

The changes produced by valvular lesions are clearly revealed by the roentgen-ray.

In mitral insufficiency the entire cardiovascular shadow is enlarged, which is due to hypertrophy of the left auricle and of the right ventricle and to dilatation and hypertrophy of the left ventricle.

In mitral stenosis the left auricle is markedly enlarged because of hypertrophy and dilatation. The pulmonary artery may be slightly enlarged.

In aortic insufficiency the left ventricle is markedly enlarged because of the combined hypertrophy and dilatation. The enlargement is mainly to the left.

In aortic stenosis there is slight enlargement of the left ventricle owing to hypertrophy. The appearance somewhat resembles aortic insufficiency, except that the enlargement of the left ventricle is less marked.

In hypertension the hypertrophy of the left ventricle gives the heart the so-called egg-shape appearance. Frequently associated with it is atheroma of the aorta, which is shown by dilatation of the ascending portion, of the arch and of the descending portion, the latter sometimes hiding the pulmonary artery.

Of congenital heart lesions, patent ductus arteriosus has the most characteristic roentgen-ray appearance—marked enlargement of the pulmonary artery.

Pericarditis without effusion is not recognizable by the roentgen-ray. When effusion is present, especially when the quantity is large, the shadow is flask-shaped and often occupies as much space to the right of the median line

as to the left. The normal curves have disappeared and the pulsations cannot be seen. The cardiohepatic angle generally persists in about 50 per cent of the cases.

(To be continued)

Woman's Auxiliary, Medical Society of Virginia

A Message from the Auxiliary President of Pennsylvania.

For this month's message to our members, we take the liberty of quoting the following editorial by Mrs. Charles H. Smith, president of the Woman's Auxiliary to the Medical Society of Pennsylvania, which appeared in a recent number of the *Bulletin of the Woman's Auxiliary to the American Medical Association:*

"Four years of accomplishment, a growing span of inspirational background and an increasing organization makes this greeting from The Woman's Auxiliary to the Medical Society of Pennsylvania one of optimism, and a rare opportunity such as this medium presents is welcomed, that the status of our inherently puissant group may be more widely heralded.

"Generally speaking, it may be said that doctors' wives have wished for some method whereby real assistance of an entirely worthwhile sort or type might be rendered their husbands. Not a trivial desire, but a potent and entirely commendable objective. Such, therefore, is the basic purpose of Pennsylvania's Auxiliary.

"Thirty counties have perfected local organizations, and a membership of 1,540 bodes well for the state as a whole.

"It has been deemed wisest and most prudent to nurture slow development, thereby gaining in strength and momentum. The wholehearted support from believing units is the only salvation for the future of our part in a national progressive scheme. Our plan is to show merit to intelligent women, as physicians' wives are, that they themselves may appreciate the advantages and thereby render support through membership and work.

"It has been found that perfect co-ordination can best be obtained among the county organizations by suggestion and counsel from an administrative body scheduled annually in open assembly. Ideas for help and improvement are transmitted from the fountain-head of our state Medical Society since it is the background of the thought moving our being. Perfect co-operation between the doctors and women is ever present.

"A strenuous canvas for '*Hygeia*,' the health magazine, has been under way. Regular perusal of its columns tends to inculcate in each member the suggestions for greater community welfare in health and progress—indeed a logical goal for such an interested personnel.

"The Medical Benevolence Fund constitutes one of the truly worthy causes, that unfortunate physicians, for any number of reasons, may be aided in regaining their original positions. It is to be noted that the term 'charity' is wiped away, and the Fund is conducted on sound principles with the greatest degree of quietness by a committee of capable alert members from the state Medical Society.

"Therefore, the officers and efficient membership of the Woman's Auxiliary to the Medical Society of Pennsylvania feel secure, for the sound idea of its development is assured, and its future shall be one of helpfulness. With such an organization, suggestions are effective, and through wise counsel good results are obtained for Educational Health."

The Woman's Auxiliary to the Post-Graduate Medical Society of Southern Virginia

Held its regular meeting in Petersburg, November 20th, the president, Mrs. E. J. Nixon, Petersburg, presiding. Mrs. Meade Edmunds gave an excellent report as to new subscriptions secured for "*Hygeia*", and Mrs. J. Bolling Jones, chairman of the legislative committee, told of an illegitimate practitioner who advertised to give a lecture in Petersburg recently and of how the matter was handled. Mrs. F. J. Wright, organization chairman, expressed appreciation to the officers for the work accomplished during the past year.

The following officers were elected for 1929: Mrs. Herbert C. Jones, Petersburg, president; Mrs. C. C. Tucker, Blackstone, and Mrs. J. N. Elder, Hopewell, vice-presidents; Mrs. R. T. Hawks, Carson, treasurer; Mrs. W. P. Hoy, Petersburg, corresponding secretary; and Mrs. H. M. Snead, Petersburg, recording secretary.

The best of plans may go askew:
They have for me; they will for you.
—*Selected.*

Proceedings of Societies

Fauquier County Medical Society.

Dr. John L. Thornton and Dr. M. B. Hiden entertained the Fauquier County Medical Society at the residence of Dr. Thornton in Warrenton, Va., on December 27, 1928. After several exciting games of pool in Dr. Thornton's private pool room, the meeting was called to order at about 6 P. M., by the President, Dr. Richard Mason and an interesting and enthusiastic meeting was held. The following doctors were present:

Dr. John T. Sprague, Warrenton; Dr. J. R. Allen, Marshall; Dr. John L. Thornton, Warrenton; Dr. J. Frank Folk, Warrenton; Dr. George H. Davis, Warrenton; Dr. Wade C. Payne, Haymarket; Dr. Richard Mason, The Plains; Dr. W. O. Bailey, Aldie; Dr. J. E. Knight, Catlett; Dr. E. N. Lillard, Nokesville, Dr M. B. Hiden, Warrenton, and Dr. Wm. N. Hodgkin, Dentist, Warrenton.

The minutes of the last meeting were read by the Secretary, Dr. J. E. Knight, and were approved as read.

Dr. J. Frank Folk and Dr. E. N. Lillard were made members of the Society.

Dr. Hiden spoke on cancer control and the work that was being done by the American Society for the Control of Cancer. He also talked for a few minutes on the work that had been done by the local hospital and the record that it had made.

Dr. Allen made an excellent talk, full of constructive criticism in regard to the local hospital, and mentioned especially the X-ray and the advisability of having an interne.

Dr. Thornton gave a talk against having an interne and discussed with great interest what fees should be charged for hospital calls.

Dr. Sprague then spoke in favor of having an interne.

An interested discussion of this subject then ensued, Dr. Trow, Dr. Payne and Dr. Allen being among the speakers.

Dr. W. O. Bailey then spoke against an interne and in favor of this work being bone by the general practitioners, who are experienced, trained men, and not by an interne who is still being trained. A motion by Dr. Sprague to have an interne was defeated. A motion by Dr. Thornton that this Society have monthly meetings at the local hotel was defeated.

Dr. Mason made an excellent speech on deadbeats and the advisability of having a black list. This was well discussed by Dr. E. N. Lillard and Dr. J. T. Sprague.

On motion, duly seconded, a resolution was unanimously passed that the members of this Society furnish their Secretary with the names of their non-pay patients, properly listed, giving the reasons why these people could not or would not pay, that from this information the Secretary would furnish to each member the names of all the non-pay patients in that section; that this resolution be given to the local newspaper, so that the patients might know that this action had been taken. The dental surgeons were invited to co-operate by listing their non-pay patients also.

On invitation from Dr. Sprague, the Society voted unanimously to meet at his residence on the last Thursday in January.

The Society then adjourned and enjoyed a delicious supper prepared by Mrs. Thornton. Many of the members remained after supper to play pool.

The Southside Virginia Medical Association

Held an excellent meeting in Petersburg, Va., December the 11th, under the presidency of Dr. W. D. Prince, of Stony Creek. The annual election of officers resulted as folows: President, Dr. R. H. Manson, McKenney; vice-presidents, Dr. J. A. Grizzard, Drewryville, Dr. J. L. Rawls, Suffolk and Dr. E. W. Perkins, Petersburg; and Dr. R. L. Raiford, Franklin, secretary-treasurer (re-elected). Drs. E. L. Kendig, Victoria, J. E. Rawls, Suffolk, and C. S. Dodd, Petersburg, were re-elected members of the executive committee. It was decided to hold the next meeting in Farmville, on the second Tuesday in March, 1929.

The Richmond Academy of Medicine,

At its annual meeting in December, elected the following officers for 1929: Dr. Wyndham B. Blanton, president, succeeding Dr. James H. Smith; and Drs. W. B. Porter and W. H. Higgins, vice-presidents. Dr. Mark W. Peyser was re-elected secretary-treasurer for the thirty-sixth consecutive term. All officers are of Richmond, Va.

The Alexandria Medical Society,

At its meeting on December the 4th, elected the following officers for 1929: President, Dr. H. A. Latane; vice-president, Dr. R. Lee Wil-

kins; and secretary-treasurer, Dr. Peter B. Pulman (re-elected). All officers are of Alexandria.

The University of Virginia Medical Society.

In the absence of Dr. W. E. Bray, the meeting of this Society on December 3, 1928, was called to order by Dr. H. T. Marshall.

Dr. Joseph B. Graham presented the specimens from an autopsy on lobar pneumonia with complications suggesting a previous infectious jaundice. Both tissues and microprojections were given. Dr. John H. Neff discussed his methods of "Hospital Follow-Up". He exhibited some of the form letters which he sends out at regular intervals to every patient leaving the hospital from his service. He discussed the value of this "Follow-Up" to the patient and the doctor. He gets about 68 per cent of replies to his letters. Dr. C. H. Peterson discussed three cases of "Osteochondritis Dissecans", exhibiting the X-ray pictures as part of his presentation. An interesting commentary upon the subject was furnished by Dr. Voshell in whose service the cases were treated. Dr. Leroy A. Calkins gave an interesting discussion of "Some Factors Controlling Blood Loss at Delivery". This was a statistical study tabulated for the purpose of drafting curves of frequency to indicate the possible correlation between the several factors.

Officers were elected for the new year. Dr. Carl C. Speidel was chosen presiding officer, Dr. Richard Meade, secretary and Dr. Harry T. Marshall, editor.

The Truth About Medicine

In addition to the articles enumerated in our letter of October 27th, the following have been accepted:

Arlington Chemical Co.
- Western Water Hemp Pollen Extract—Arlco
- Spiny Amaranth Pollen Extract—Arlco

E. Bilhuber, Inc.
- Metrazol
  - Metrazol Ampoules, 1 c.c.
  - Metrazol Tablets

The Gilliland Laboratories, Inc.
- Rabies Vaccine—Gilliland (Semple Method)

H. A. Metz Laboratories, Inc.
- Salyrgan
  - Ampules Salyrgan Solution, 1 c.c.
  - Ampules Salyrgan Solution, 2 c.c.

E. R. Squibb & Sons
- Antipneumococcic Serum, Type I, 50 c.c. gravity container
- Antistreptococcic Serum—Squibb, 50 c.c. gravity container
- Squibb's Mint-Flavored Cod Liver Oil

NEW AND NONOFFICIAL REMEDIES

Mulford Acidophilus Bacillus Blocks.—A culture of *B. acidophilus* (Y strain), embedded in a 2 per cent agar jelly containing milk powder, lactose, d-glucose and sucrose, and marketed in the form of chocolate covered cubes, each of which contains approximately 150 billion viable organisms (*B. acidophilus*) at the time of issue. For a discussion of the actions and uses of bacillus acidophilus see Lactic Acid Producing Organisms and Preparations, New and Nonofficial Remedies, 1928, p. 228. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., November 3, 1928, p. 1375).

Phentetiothalein Sodium.—Phenoltetraiodophthalein Sodium.—Phentetiothalein sodium contains from 56 to 59 per cent of iodine. It is used for the roentgenologic examination of the gall-bladder and simultaneous test of hepatic function. Following the intravenous injection, the solution appears in the normal gall-bladder in sufficient concentration to cast a shadow to the roentgen-rays and if the liver is damaged it is retained in the blood in amounts indicative of the extent of impairment.

Iso-Iodeikon.—A brand of phentetiothalein—N. N. R. It is marketed in 2.5 Gm. ampoules. Mallinckrodt Chemical Works, St. Louis. (Jour. A. M. A., November 17, 1928, p. 1549).

Ethylhydrocupreine.—This is a synthetic derivative of cupreine and is closely related to quinine. It has the anti-malarial and anesthetic action of quinine. Toxic symptoms, however, are more liable to occur than with quinine. Clinical investigation indicates that the drug may be of value in the treatment of lobar pneumonia, if a sufficient amount can be administered sufficiently early without untoward effect. To avoid such effect, it is proposed to secure slow absorption through the administration of the free base by mouth. The drug has a definite value in the treatment of pneumococcic infections of the eye.

Optochin Base.—Optochin.—Ethylhydrocupreine.—For a discussion of the actions and uses see ethylhydrocupreine. Optochin Base is supplied in powder and in two grain tablets. Merck & Co., Inc., Rahway, N. J.

Optochin Hydrochloride.—The hydrochloride of ethylhydrocupreine. For a discussion of the actions and uses see ethylhydrocupreine. For application to the eye and instillation into the conjunctival sac, a freshly prepared 1 or 2 per cent solution is used. It is not recommended for oral administration. Merck & Co., Inc., Rahway, N. J.

Tablets Protargentum—Squibb, 4.6 grains.—Each tablet contains 4.6 grains of protargentum—Squibb (New and Nonofficial Remedies, 1928, p. 397). E. R. Squibb & Sons, New York.

Tablets Solargentum—Squibb, 4.6 grains.—Each tablet contains 4.6 grains of solargentum—Squibb (New and Nonofficial Remedies, 1928, p. 398). E. R. Squibb & Sons, New York.

Capsules Ephedrine Hydrochloride—Abbott, ⅜ grain.—Each capsule contains ⅜ grain of ephedrine hydrochloride—Abbott (New and Nonofficial Remedies, 1928, p. 176). Abbott Laboratories, North Chicago, Ill.

Antimeningococcus Serum Concentrated, Lilly—An antimeningococcus serum (New and Nonofficial Remedies, 1928, p. 359) refined and concentrated by the Banzhaf method. It is marketed in packages of one 1 c.c. double ended vial with apparatus for intraspinal injection. Eli Lilly & Co., Indianapolis.

Antistreptococcus Serum, Purified and Concentrated (Lilly).—A polyvalent antistreptococcus serum

(New and Nonofficial Remedies, 1928, p. 361) prepared by immunizing horses against virulent strains of the various streptococcus groups. It is marketed in packages of one 10 c.c. syringe and in packages of one 10 c.c. vial. Eli Lilly & Co., Indianapolis.

Capsules Ephedrine Sulphate—P. D. & Co.—Each capsule contains 0.025 Gm. of ephedrine sulphate—P. D. & Co. (New and Nonofficial Remedies, 1928, p. 178). Parke, Davis & Co., Detroit. (Jour. A. M. A., November 24, 1928, p. 1633).

PROPAGANDA FOR REFORM

The Vit-O-Net Again.—A report on the "Vit-O-Net Electro-Magnetic Blanket" and its method of exploitation was published in the Jour. A. M. A., March 10, 1928. The Vit-O-Net is a large electric heating pad which sells for about $100. Now an attempt is being made to lead the public and medical profession to believe that the objectionable methods of exploitation have been abandoned. Further, the public is being told that every purchaser of a Vit-O-Net will be entitled to medical service for himself and all members of his family as long as he owns one of the blankets, and that this "Health Division is under the direction of a physician, an M. D., who also is a Master of Arts and a Fellow of the American Medical Association." The promoters feature the name of Dr. F. Bache Van Nuys as the health expert, and more recently, there has been issued an elaborate booklet in which practically all of the fantastic claims previously made for Vit-O-Net are repeated. The booklet contains a picture of F. Bache Van Nuys. On September 4, 1928, the Journal received a brief note from Dr. Van Nuys stating that he had resigned from the position of Health Director of the Vit-O-Net Corporation. (Jour. A. M. A., September 8, 1928, p. 743).

Avertin.—Avertin (also referred to as E. 107) apparently is tribrom-ethyl alcohol. A recent report by Hans Killian states that it is a useful sleep-producer and sedative but that full narcosis cannot be produced with it without injuring the human organism. He holds that to introduce into the organism a molecule with properties so decidedly injurious to the vital centers in a single dose without knowledge of individual rapidity of absorption is dangerous. For more than thirty years rectal narcosis has been tried again and again, and has always been given up because, in opposition to inhalation-narcosis it is not possible either to decide on the precise dose or to interrupt the narcosis when once produced. (Jour. A. M. A., September 8, 1928, p. 745).

Distribution of Arsenicals in the Body.—Arsenical dermatoses have long been known to follow the use of certain familiar arsenical drugs. By employment of microchemical methods it was demonstrated that, after administration of such products as Fowler's solution (solution of potassium arsenite) or Donovan's solution (solution of arsenous and mercuric iodide), arsenic becomes localized in the epidermis, subpapillary layer and other ectodermal tissues. On the other hand, keratoses and pigmentation appear to be in extreme rarity following the administration of arsphenamines. A new study has demonstrated a well defined difference in localization of the arsenic following introduction of certain trivalent and pentavalent arsenicals. This may explain the pathologic processes that they produce and their therapeutic action. Arsenic in trivalent compounds has a special affinity for the vascular structures, while the pentavalent arsenicals seem to be directed toward the ectodermal structures. (Jour. A. M. A., September 15, 1928, p. 805).

Vitamin A Deficiency and Infection.—The susceptibility to infections of various kinds as affected by the adequacy or deficiency of diet with especial reference to the vitamins has attracted renewed interest. An increased susceptibility to tuberculosis has been shown in rachitic rats, a species normally possessing a marked immunity to such infection. The long delayed effects of a mild deficiency of vitamin A "no greater than may readily occur within the range of ordinary normal or adequate nutrition" have been studied on rats. At the end of the experiment, autopsies were made and the incidence of infection was determined in all the rats. In the first group this was 25 per cent; in the second, 75 per cent. The only difference between the two groups was the dietary treatment of the mother and young up to the time of weaning, one series having plenty of vitamin A, while the other was somewhat limited in its supply. The similarity in the nutrition of the rat and of man permits these results to be translated into human age relationships and suggests that a difference in incidence of infection is to be expected among children of around 10 and 12 years, resulting from difference in the way they were fed before they were three years old. (Jour. A. M. A., September 29, 1928, p. 962).

Leventis' Humanized Serum.—Dr. Leventis assumes on the basis of vaguely cited "innumerable experiments" of eighteen years' duration that it is possible to render naturally immune animals susceptible to tuberculosis by injecting the serum of a susceptible animal. Without going into the unlikelihood of this exaggerated importance of the serum alone in the complex matter of immunity, any well trained physician would wish to see carefully recorded experiments, many times repeated, and by others than the original investigator, and reported in the usual mediums of scientific exchange, before accepting this hypothesis. The United States Public Health Service has not authorized interstate sale of the Leventis serum. (Jour. A. M. A., September 29, 1928, p. 980).

Bladder Stones and Mineral Waters.—If treatment of bladder stones is interpreted as the employment of a method or methods to remove such concretions by other than operative means, it must be stated that we do not know of any mineral water or any other fluid that would be apt to dissolve vesical calculi. There is no evidence for supporting the claim that certain mineral waters have specific properties in preventing the formation of urinary concretions. (Jour. A. M. A., September 29, 1928, p. 981).

Book Announcements

Partnerships, Combinations and Antagonisms in Disease. By EDWARD C. B. IBOTSON, M. D. (Lond.), B. S., Fellow Royal Society of Medicine, London. Philadelphia. F. A. Davis Company, Publishers. 1929. Octavo of 348 pages. Illustrated. Cloth. Price $3.50 net.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Medicine, Surgery and the Various Specialties. By LEADING MEMBERS OF THE MEDICAL PROFESSION THROUGHOUT THE WORLD. Edited by HENRY W. CATTELL, A. M., M. D., Philadelphia, with Collaborators. Volume IV. Thirty-Eighth Series, 1928. Philadelphia and London. J. B. Lippincott Company. 1928. Octavo of 312 pages. Cloth.

Methods and Problems of Medical Education. (Eleventh Series). Division of Medical Education. The Rockefeller Foundation, 61 Broadway, New York, N. Y., U. S. A. 1928. 272 pages. Illustrated. Paper.

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Editorial

Infections of the Respiratory Organs.

Much has been done in preventive medicine to make one feel a bit of confidence in the ultimate eradication of certain diseases. Diphtheria, typhoid fever, and malaria may be cited to illustrate the fancy that one may entertain upon this point. But when one stands face to face with the history of epidemic waves of a disease that strike down thousands of people in a few weeks and produce a death rate of rapid and increased incidence unlike any other disease, one must feel a sense of humility and incompetence in spite of the world's present day satisfaction over the accomplishments of modern science and medicine. A memory of the appalling and withering sweep of the flaming breath of that dreadful pandemic of influenza in 1918 and in less form of 1919-1920, with the present evidence of a widespread occurrence of influenza in this country, striking with direful effect at the respirtaory organs, make for a call to the realization of the limitations of present day knowledge both as to prevention and cure of this "Captain of the men of death".

"Common or bad cold", rhinitis, sinusitis, ethmoiditis, laryngitis, trachitis, bronchitis, pneumonitis and pleuritis are the group of territorial inflammations that set up under various infective agents a train of symptoms that bring serious dangers at this period of the year. Not only in the influenzal years, but every year, the offices of medical men the nation over are frequented by patients afflicted, either directly or indirectly, as the result of an infection of the respiratory organs. Death rate and disease incidence are augmented. Prevention and method of cure, apparently largely to be found within the inherent qualities of the resistance possessed by the individual, are brought to the highest state of efficiency by obedience to certain common sense measures of living.

Epidemiology of Influenza.

Epidemics ever challenge the interest of the students of disease. The great plagues of early times, and the widespread sweeping movements of contagious diseases of recent years, give a big slant upon the nature and characteristics of maladies of an infectious origin. A certain control of the movement of the diseases has been brought about, in part, by a historic study of these big epidemics. But the epidemiological study of influenza has as yet not revealed sufficient data to make sure of the origin and nature of the cause of the disease or its actual methods of propagation over civilized communities with such astounding rapidity and virulence.

Influenza has shown pandemic characteristics that have betwildered scientific inquiry. From apparently far-flung foci, the epidemics have begun. One author suggests an endemic focus "possibly in Turkestan from which a pandemic starts". From such, with unexplained rapidity, it strikes a world stride and sweeps in vigorous virulence from country to country, from family to family, leaving in its trail death and pathology of all sorts—like the influenza of 1918—the greatest pandemic of history. To the Italians in the seventeenth century the term "influenza" must be ascribed. They thought the disease was "influenced" by the stars. The French named the disease "grippe" in 1743. Epidemics of the disease were noted in 1403. In 1507, in Paris, the law court sessions were abandoned on account of the coughing and sneezing. Epidemics of influenza were noted in 1580, 1676, 1703, 1732, and 1737.

Ancient physicians refer to symptoms in keeping with those of influenza, making widespread incidence in a short time. Epidemic manifestations of sudden invasion, rapid and extensive spread of disease are noted by the earliest medical writers.

An explosive epidemic of notable virulence occurred in 1889-1890. St. Petersburg, London, cities of Germany, Spain, Portugal, America, South America, Islands of the Sea,

China, India, West Africa, and Australia, during this period were smitten by the "flu".

Again, a serious epidemic recrudescence, but of a milder type, occurred in 1893, in 1894, again in 1895, and also milder epidemics appeared in various localities and countries in the years preceding 1900.

Influenza presents pathological changes chiefly in the respiratory tract. Invariably, in cases of influenza, infection of the respiratory tract presents itself in the form of rhinitis, laryngitis, trachitis, bronchitis, and broncho-pneumonia. In grave cases complications of broncho-pneumonia are found. What is known as B. influenza, admixed hemolytic streptococci and pneumococci, and other pyogenic organisms, are found in fatal cases and in a considerable number of non-fatal cases.

The picture of broncho-pneumonia is not easy to draw in a running comment of this sort. The bronchi are engorged; there is congestion and extravasation of blood in the mucosa; pneumonic areas are found in discrete or coalesced forms: hemorrhagic areas are found in fatal cases.

In early and late stages pathologic changes may involve an entire lobe and the lungs throughout may be filled with exudative material.

The Invasion of "Flu".

The clinical entry of the disease is sudden. The "period of incubation" is from a few hours to a few days. Susceptibility, or "powers of resistance", or general conditions surrounding the exposed individual, causes a variability in the symptom-display. It is as important to recognize atypical as typical symptoms. Prodromes, in face of an epidemic, of sudden malaise, fatigue, attacks of sneezing, scratchy-throat, hoarseness, itching eyes and frontal headaches, with backache and pains throughout the body, should always be treated with comprehension of the significance of such symptoms and an evaluation of the tremendous possibilities that follow upon failure to corral for the body early, every "ounce" of body-resistance possible. Prostration, fever, chilliness, headache, dry, harsh coughing, with physical signs of bronchitis, may soon ensue with a long train of possible complications about the accessory sinuses; affections of the kidney, heart, pleurae, lungs and elsewhere.

Broncho-pneumonia is the most immediately serious condition to be met in the clinical evolution of this infection of the respiratory tract. In some patients broncho-pneumonia may appear very early; in others it may follow from neglected treatment or carelessness in the method of treating primary symptoms. Sputum tinged with blood, diffuse rales, coarse and fine, may be noted. Here fine and crepitant, there course and movable, rales may be traced over the chest. One may feel that there are here and there small areas of consolidation from the areas of distinct crepitant rales found. There may be pleural pains associated.

Cyanosis is an ugly symptom, not so common in this epidemic, but extremely common in the epidemic of 1918. Cyanosis was in this epidemic an ominous sign and marked the course of the disease in many of the fatal cases long before death. Cyanotic patients rarely recover.

As the disease progresses and recurs during the coming winter months of January, February and March, we may expect to see more and more cyanotic patients with a higher rate of fatality.

Convalescence

This period of the disease demands closest attention. Following the fever, weakness and prostration are marked. Few patients are willing to remain under treatment through slow convalescence or recovery. Complications of the "flu" light up afterwards because of carelessness during this important period. Before the body is able to withstand re-infection, influenzal patients expose themselves or fail to prevent further inroads of the disease elsewhere in the body.

Hence, complications, such as lobar pneumonia, pulmonary abscess, gangrene, pleurisy, and empyema may appear. Complications may appear in the heart, as pericarditis, endocarditis, myocarditis, and functional disturbances as arrhythmias. Kidney disease may set up following "flu"; pregnancy in dangerous with influenza; nervous disorders appear as complications.

As to treatment there is no specific. As the specific cause is not known and as the epidemic movement of the disease over wide areas of the earth is as yet unexplained upon any proven etiologic basis, the treatment remains largely one of resort to rest in bed, good nursing and wise advice as to the management

of symptoms. For neuro-muscular pains, fever, cough, and like symptoms, physicians resort to well known remedies. To meet complications of pneumonia and heart complications, the therapeutist has to be on the alert, bringing to bear on such cases the experience of individual practice.

Whether digitalis, oxygen, vaccine, serum, diathermy: these are among questions of therapy to be considered as cases and conditions arise.

A. G. B. JR.

The Teaching of Obstetrics.

We hear a lot now-a-days about the high maternal mortality, but very little about the teaching of obstetrics. The high maternal mortality, it seems, has been with us always. Formerly, we complacently ascribed it to the midwife who has also been with us always, but each year there are fewer deliveries by midwives and yet the rate stays unchanged. Such studies as those of Julius Levy (*Am. J. Pub. Health*, 13:88, Feb. 23), who tabulated the maternal deaths and the percentage of deliveries by midwives in the various counties of New Jersey, show little correlation between the two.

In the registration area of the United States, one woman out of 135 dies having a baby. L. L. Dublin, statistician, states (Mortality Incident to Child-bearing, *Am. J. Ob.* 78:28, July, '18) that, with proper obstetrics, the figures should be one in every 500 and this ideal is attained in the great maternities of the country. The difference of five dead mothers in every 1,000 deliveries is the difference between more or less traditional or folklore obstetrics, if you please, and that practiced by adequately trained persons.

It is inspiring, therefore, when the president of an international special society takes up the question of the teaching of obstetrics in his presidential address. Palmer Findley's masterly discourse (*Am. J. Obst. & Gynec.* 16:11, Nov. '28) should be read by everyone interested in medical education or in public health. I am not so sure but that it should be put into the hands of all public-spirited persons regardless of their calling. Dr. Findley traces the development of obstetric pedagogy which is of surprisingly recent date. For instance, Dr. James P. White who held the first obstetric clinic in this country in 1850, at the University of Buffalo, was libeled by the press and bitterly attacked by members of his own profession.

From the replies to more than 400 letters of inquiry sent to the deans of the various medical schools, Dr. Findley has given us an unique survey of the present day teaching of obstetrics all over the world. This varies from the very satisfactory clinical teaching of obstetrics in Sweden, with its maternal mortality of 2.58 per 1,000 live births to that of the United States with its 7.99 rate. In Sweden "the students in the University of Lund devote four months to clinical obstetrics, living and breathing the atmosphere of the clinic. Each student will have personally conducted an average number of thirty-eight to forty labors, one to two forceps, and one to two abortions. Some will have performed versions, manual delivery of the placenta and like maneuvers."

Contrast this with the state of affairs in the United States, as described by Dr. Fred C. Zapffe, Secretary of the Association of American Medical Colleges, "During an experience of twenty-three years of visiting medical schools, I have gained certain impressions that have never varied, but have multiplied. As a rule, obstetrics and gynecology are in one department of which a gynecologist is the head, as there are only a few obstetricians and, even if there were more, the gynecologist would insist on the headship for the department, or a separate department. Therefore, the bulk of the hours allotted to the combined department are taken by the gynecologist. I find that in many schools there is very inadequate provision made for training students in actual delivery work."

Is the medical profession going to remedy this defect or is it going to sit still until the public gets wise and takes the matter into its own hands?

M. P. R.

Syphilis.

It is noteworthy that the master clinician, author and teacher, Sir William Osler, produced as his swan song an oration entitled, "The Campaign Against Syphilis." In this, his ability to present accurate scientific data in classical form is again demonstrated. Osler during his career showed his ability to select major medical problems to which to devote his time and attention.

The subdivisions of his oration have the fol-

lowing headings: "The Conquest of the Great Infections", "Statistical Data", "Reduction of Typhoid Fever", "Gonorrhea and Race Conservation", "Syphilis", "Stillbirths", "Infantile Mortality", "Widespread Manifestations of the Spirochaete'", "Examination of Registrar-General's Mortality Return", "Postmortem Evidence", "The Wassermann Reaction", "The Growth of Campaign Against Venereal Diseases", "Legislative Action", "Establishment of Venereal Clinics", "Education of the Public", "Unqualified Treatment, Notification, Compulsory Treatment", and "The Outlook". There is a complete presentation of evidence which shows the widespread distribution of syphilis, its seriousness and the possibilities of its eradication. Osler places it among the first causes of mortality.

He states that now the public is awake to the necessity of a campaign aginst this plague of mankind. The State is now ready to intervene and this adds ground for hope. The people themselves have had a change of heart, "The sinner is to receive Christian treatment."

The Virginia State Board of Health should be commended for issuing this final endeavor of Dr. Osler's in abstract form and distributing it to the entire medical profession of this State. This pamphlet is worthy of the attention of every physician in this State and Country.

At the last meeting of the State Medical Society at Danville, there was organized a society whose purpose it is to promote every phase of the campaign against venereal diseases. The initial meeting was small in numbers, but it is hoped that this organization will meet with the whole-hearted energetic support of the medical profession of this Commonwealth.

News Notes

Influenza Prevalence.

Reports in public health bulletins indicate a widespread prevalence of influenza, the New England States perhaps having suffered less to this time than other parts of the country. In all states the epidemic appears to have been of milder form and with a lower mortality rate than in 1918, though doctors are urged to warn their patients against the danger of relapses. During the two weeks ending December 24th, approximately 70,000 cases in Virginia had been under the care of doctors. It is stated that the epidemic apparently reaches its height in a community in about two or three weeks and lasts about five weeks, and from 15 to 40 per cent of the population becomes affected.

The Southern Surgical Association,

At its forty-first annual meeting at White Sulphur Springs, W. Va., the middle of December, elected Dr. Lucius E. Burch, Nashville, Tenn., president. Drs. Albert O. Singleton, Galveston, Texas, and Fred W. Bailey, St. Louis, Mo., were elected vice-presidents, and Dr. R. L. Payne, Norfolk, Va., was re-elected secretary. Savannah, Ga., was chosen for the 1929 place of meeting.

News for Founder's Day at Medical College of Virginia.

Dr. Joseph L. Miller, donor of a rare collection of medical books to the Richmond Academy of Medicine, will speak on "Physicians of the Old South, Their Character and Education" on founder's day at the Medical College of Virginia, Richmond, February 15, 1929. On the same occasion Dr. Charles R. Robins, professor of gynecology at the Medical College of Virginia, will read a paper on the beginnings in nursing education in the modern sense at the Medical College of Virginia.

Cabaniss Hall, the new dormitory for women, chiefly of the school of nursing at the Medical College of Virginia, will be formally opened on founder's day, February 15, 1929. This building accommodates 134 persons, one-half in single and one-half in double rooms with hot and cold water in each room. Certain recreational and teaching facilities as well as a large dining room, kitchen, and ice making plant are provided for in this building.

Medical and Pharmaceutical Co-operation.

Perhaps one of the outstanding reasons for the progress in the scientific development of new products has been the spirit of co-operation which has existed between the medical profession and the pharmaceutical industry.

By this close co-operation medical science has contributed to pharmaceutical progress and the manufacturing pharmacists of the country in turn have made a definite contribution toward the development of new medicinal products.

On Wednesday, December 5th, the officials and members of the medical, pharmaceutical

and allied professions of Lafayette, Indiana, were addressed by Dr. Charles E. Vanderkleed, Chairman of the Contact Committee of the American Pharmaceutical Manufacturers' Association.

The subject of Dr. Vanderkleed's address was "Improvement in the Quality of American Drug Products due to Co-operation in the Industry". It is interesting to see the representatives of the several allied professions making arrangements for a periodical study of mutual interests of professional nature with a view to increasing mutual usefulness.

It is only through medical and pharmaceutical co-operation that the greatest advances can be made in conquering disease and improving the health of the American people.

The Richmond Ophthalmological and Oto-Laryngological Society

Held its regular meeting on December the 10th, Dr. R. E. Mitchell, president presiding. Dr. F. H. Lee was at his accustomed place as secretary. Papers were presented by Dr. Mitchell and by Dr. Dean B. Cole, invited guest. The following officers were elected for the ensuing year: President, Dr. E. T. Gatewood; vice-president, Dr. E. U. Wallerstein; secretary, Dr. William R. Weisiger. Meetings are held monthly.

Dr. Elizabeth Holt Edmunds

Has located in Richmond, with residence and offices at 204 East Franklin Street, and will be engaged in the general practice of medicine. Dr. Edmunds is a member of the class of '25, University of Virginia, Department of Medicine. Since graduating, she has taken special work in obstetrics and spent the past year as resident on the Tuberculosis Service at Bellevue Hospital, New York City.

Dr. I. J. Haynes,

Recently of New Hope, Va., spent the holidays with his family at their home in Homestead, Florida.

Dr. C. R. Hoskins, Jr.,

Of the class of '27, Medical College of Virginia, now engaged in the practice of medicine at Brewton, Alabama, visited relatives and friends in Virginia during the holidays.

Dr. W. T. Potter,

After spending some months as a patient at the New York Orthopaedic Hospital at White Plains, N. Y., has returned to his home in Norfolk, Va.

Pollen in Demand for Treating Hay-Fever Patients.

The United States Department of Agriculture calls attention to the "increasing demand for wind-borne pollen" for making extracts with which to treat hay-fever patients. Various methods of collecting pollen have been tried but they have not always proved entirely satisfactory for providing pollen in quantity and of acceptable purity. Improvements in such methods have been developed by the department which seem to adapt them to all requirements. Pollen in usable quantities was collected from more than forty different plants in the District of Columbia and vicinity in the course of investigations reported in a new publication prepared by James W. Kelly, of the Office of Drug, Poisonous, and Oil Plants, of the Bureau of Plant Industry, in which there are illustrations of the apparatus required and a full discussion of the methods employed.

A copy of this Circular No. 46-C, "Methods of Collecting and Peserving Pollen for Use in the Treatment of Hay-Fever," will be found of value and interest to prospective pollen collectors and may be obtained by writing to the United States Department of Agriculture, Washington, D. C.

Does Education Pay?

Education pays, not only in a richer life but in money returns. An investigation of the earnings of nearly 5,000 people in all parts of the United States showed that the average incomes of the more highly educated were greater at each stage of life, and that advance in income came to an end earlier for the less educated groups—at fifty years of age, for those with common-school education and at fifty-five for those with high school training, while it did not come to an end for college-trained men until the early sixty's.

The Women Physicians of the Southern Medical Association

Held their fourteenth annual meeting November 13th, at the Woman's Club, Asheville, N. C.

This organization was started at the Southern Medical Association Convention in Lexington, Ky., just fifteen years ago and has as its object the fostering of a spirit of comradeship among the women who are members of this, the second largest medical organization in the country.

A discussion of the needs of medical women throughout the South resulted in the decision to dedicate the funds at present in the treasury as a nucleus for a student loan fund for the use of young southern women who are struggling for a medical education.

It was further decided to unite all efforts to obtain the affiliation of every medical woman who is now a member of the Southern Medical Association and also to bring in for membership in the parent organization, those women in our territory who are eligible.

The officers elected for the ensuing year are: Dr. Louise M. Ingersoll, Asheville, N. C., Chairman; Dr. Marjorie Lord, Montreat, N. C., Vice-Chairman; Dr. Mary B. Baughman, Richmond, Va., Secretary-Treasurer.

The meeting was followed by a banquet at the Woman's Club, to which all medical women attending the Southern Medical Convention were invited.

The physicians attending the banquet were: Drs. Annie Alexander, Charlotte, N. C.; Clara B. Barrett, Atlanta, Ga.; Mary B. Baughman, Richmond, Va.; Jane B. Guignard, Columbia, S. C.; Louise M. Ingersoll, Asheville, N. C.; May Farinholdt Jones, Sanatorium, Miss.; Eva Locke, White Plains, N. C.; Marjorie Lord, Montreat, N. C.; Caroline McNairy, Lenoir, N. C.; Caroline C. Sherrill, White Rock, N. C.; Edna S. Valentine, Columbia, S. C. and Edythe Welbourne, Columbia, S. C.

Dr. Baughman gave a brief sketch of the formation of the organization.

Dr. Alexander, who was the first woman physician in North Carolina, gave a most interesting account of her early experiences. The daughter of a physician, she had a scientific background, but even with that the verbal examination which the medical student of forty years ago was required to pass before receiving a license to practice must have been a most trying ordeal. The place which Dr. Alexander has made for herself in the estimation of her medical confreres was manifested in a practical way a few years ago, when she was elected president of her county society.

Dr. Guignard, the last speaker, told of some of the problems facing the woman in independent practice, and gave some very amusing incidences.

The Tri-State Medical Association of the Carolinas and Virginia

Will hold its thirty-first annual meeting at Greensboro, N. C., February the 19th and 20th, under the presidency of Dr. James K. Hall, of Richmond, Va. An excellent program is being arranged and a pleasant and interesting meeting is in store for those doctors who can attend. Headquarters will be at the O. Henry Hotel.

Physical Therapy Department at N. Y. Polyclinic.

The New York Polyclinic Medical School and Hospital, 341-353 West Fiftieth Street, New York City, has opened its new Physical Therapy Department in its main building. This department will serve for teaching, research and for the treatment of both in- and out-patients, and is under the direction of Dr. Richard Kovacs, Clinical Professor of Physical Therapy.

The Seaboard Medical Association of Virginia and North Carolina

Held its annual meeting at Washington, N. C., December 4th-6th, under the presidency of Dr. D. T. Tayloe, Jr., of that city. There were a number of interesting papers by members and several invited guests. A quail hunt and ducking party were arranged for members who could enjoy them after the meeting.

Newport News, Va., was selected for the 1929 meeting, which is to be held December 3rd, 4th, 5th. The following officers were elected: President, Dr. Robert A. Davis, Newport News, Va.; vice-presidents, Dr. Stuart Mann, Moyock, N. C., Dr. James A. Grizzard, Drewryville, Va., Dr. W. I. Wooten, Greenville, N. C., and Dr. Robert Matthews, Norfolk, Va.; treasurer, Dr. A. M. Burfoot, Fentress, Va., and seecretary, Dr. Clarence Porter Jones, Newport News, Va. Both the latter officers were re-elected.

The American Social Hygiene Association

Is to hold its annual meeting in New York City, January 18th and 19th. Headquarters of this Association are at 370 Seventh Avenue, New York, N. Y.

Infant Mortality and Birth Rates in England and Wales in 1927.

England and Wales in 1927 had an infant mortality rate of 70 per 1,000 live births, the same as the rate for 1926 and only one point higher than the lowest recorded rate—69 in 1923. The death rate for legitimate infants was 67, while for children born out of wedlock it was 120. The birth rate for 1927 was the

lowest on record, 16.6 per 1,000 population, the lowest previous rate being 17.7 in 1918.

In the birth-registration area of the United States the infant mortality rate for 1927 was 64.6. The birth rate in 1927 for the same area was 20.6 per 1,000 (estimated) population.

How Many Deafened Children?

Ten per cent of the school population of the United States, or about 3,000,000 children, have measurable defects of hearing, reports the Joint Committee on Health Problems in Education. The committee has recommended, among other things, a uniform law in all States and cities requiring an annual examination of the hearing of school children as a part of the general annual health examination, emphasis on the means of preventing deafness, and, ultimately, the opening of clinics in the schools.

Dr. Margaret Kuyk,

Richmond, Va., recently attended the meeting of the American Association for the Advancement of Science, in New York City, as one of the representatives from Westhampton College, Richmond.

The U. S. Civil Service Commission,

Washington, D. C., announces open competitive examinations for toxicologist, associate toxicologist, and assistant toxicologist, applications for these positions to be on file with the Commission, in Washington, not later than January 23, and for physiotherapy aide, applications to be on file with the Commission not later than February 5, 1929.

Married.

Dr. Edward Wherry Gray, Richmond, Va., and Miss Eva Lee Corron, Front Royal, Va., December 15th.

Dr. Harry Walker of the class of '26, Medical College of Virginia, and Miss Pamelia Gary, of Richmond, Va., December the 8th, in New York City. Dr. Walker is director of the Southampton County Health Unit, with headquarters at Courtland, Va.

Dr. Benjamin Herman Bailey, of Sandston, Richmond, Va., member of the class of '26, Medical College of Virginia, and Miss Frances Rives Adcock, Orlando, Fla., December 28th.

Dr. John Bolling Vaiden, Jr., Highland Springs, Va., and Miss Lottie May Osborne, Elko, Va., December 1st.

Dr. William Lauch Hughes, Jackson, Miss., and Miss Zella Hume Harris, Charlottesville, Va., December 8th. Dr. Hughes graduated from the University of Virginia, Department of Medicine, in 1926.

Dr. Charles Lee Baker, Augusta, Ga., of the class of '97, University of Virginia, Department of Medicine, and Miss Blanche Coghill, Bowling Green, Va., December 27th.

Dr. William Edwin Dickerson, Princeton, W. Va., and Miss Norma Arline Bird, of Rock, September 22nd. Dr. Dickerson is an alumnus of the Medical College of Virginia in the class of '22, later interning at the Retreat for the Sick, Richmond, Va.

Dr. R. M. Wiley,

For some time of Salem, Va., is now located at Burkeville, Va., where he is first assistant physician to the Piedmont Sanatorium.

Rest Homes for Young Workers in Austria.

Austria's welfare bureau for young workers has opened six homes where working children whose health is below par may enjoy vacations in the country at nominal expense. The average vacation period is four weeks. Proper food and outdoor exercise and recreation are provided under the supervision of physicians. The cost of these homes is met by sickness-insurance funds, appropriations by the National and local governments, and the fees paid by the young vacationists. During the ten years the homes have been open more than 75,000 young workers have been cared for.

Who Are the Victims of Pellagra?

Children two to fifteen years of age whose families have too small incomes to give them enough of the right kind of food—these are the favorite victims of pellagra, says the report of the U. S. Public Health Service on the findings of the recent study of endemic pellagra in certain mill villages of South Carolina. Sanitary conditions did not seem to have any consistent influence on the prevalence of the disease, but its fluctuations from year to year appear to have been bound up with fluctuations in economic conditions.

Dr. George H. Preston,

For a couple of years connected with the psychiatric department of the Children's Memorial Clinic, Richmond, Va., who moved to Baltimore about a year ago, has resigned his position as executive secretary of the Mental Hygiene Society of Maryland so as to devote his time to the office of state commissioner of mental hygiene.

Principal Causes of Death.

The Department of Commerce announces that 1,236,949 deaths occurred in 1927 within the death registration area of continental United States, representing a death rate of 11.4 per 1,000 population—the lowest rate since 1900. This area in 1927 comprised 42 states, the District of Columbia and 21 cities in non-registration states.

The principal decreases in death rates in 1927 were from pneumonia, influenza, tuberculosis, diarrhea and enteritis, nephritis, measles, and diseases of the heart. There was an increase from 18 to 20 per 100,000 in 1927 in the death rate from automobile accidents.

Dr. S. E. Hughes, Jr.,

Danville, Va., is temporarily serving as assistant resident physician to Iola Sanatorium, Rochester, N. Y. In May, he will go to Saranac Lake, N. Y., to attend the Trudeau School of Tuberculosis.

Diphtheria—Its Prevention and Treatment.

About three-fifths of the victims of the scourge of diphtheria are children under 5 years of age, and most of the other victims are children under 10, says Dr. Walter W. Lee, of the Indiana State Board of Health in the *American Journal of Public Health* for November. Therefore, immunization work in diphtheria should be concentrated on children under 10, and especially on children of preschool age. The results of extensive immunization of the child population in the few cities which have carried out such a program indicate that the disease may be controlled, or even eliminated, by that method, says the author.

In regard to the failure of antitoxin treatment to prevent death after diphtheria has developed, Dr. Lee thinks it due in most cases to delayed or improper administration. A study of 800 deaths from the disease in Indiana and New York showed that in 40 per cent of the cases the physician was not called until three days after the onset, in 35 per cent the antitoxin was not given on the physician's first visit, in 35 per cent it was incorrectly administered, and in 10 per cent it was not used at all.

Dr. William T. Green,

Recently of Norfolk, Va., announces that he has located at Cape Charles, Va., where he limits his practice to diseases of the ear, nose and throat. His residence is at Nassawadox, Va.

Dr. Waverly R. Payne,

Newport News, Va., has received the appointment of resident surgeon in the department of obstetrics and gynecology at the Jersey City Hospital, N. J., for a year, and entered upon his duties there on January the 1st.

Dr. J. T. Daves,

Danville, Va., had a narrow escape, early in December, at Memorial Hospital, that city, when he was knocked senseless by a highly charged wire. He was in the X-ray department when his forehead came in contact with a hanging wire and he was hurled to the ground. He was badly shaken and sustained a scalp burn.

Dr. W. G. Suiter,

Weldon, N. C., has been elected president of the Kiwanis Club of that city for 1929.

Richmond Dental Society.

At the annual meeting of this society in Richmond, Va., December the 20th, Dr. Guy Harrison was elected president, succeeding Dr. John Bell Williams, business manager of McGuire Clinic, this city. Dr. Harrison is the dental member of the Virginia State Board of Health and a member of the Medical Society of Virginia.

As a tribute for his activities in the profession and his recent election as vice-president of the American Dental Association, Dr. Harry Bear was presented a silver vase by the Society.

The following suggestions by the retiring president, Dr. Williams, were adopted: That the Society's scholarship in the College of William and Mary be named the J. A. C. Hoggan memorial scholarship, and that a similar scholarship of the Society be named in honor of the late Dr. Montelle B. Rudd.

Dr. R. H. Bruni was re-elected secretary-treasurer of the Society.

Dr. R. D. Tucker,

Powhatan, Va., who has been suffering with a broken arm and a bad cold, is reported as much better.

Tear Gas Used in New Fumigation Method.

In connection with the prevention of the introduction of quarantinable diseases into the United States, the Public Health Service maintains maritime quarantine stations at all the principal seaports in the United States and its possessions through which all ships from

foreign ports must pass prior to entering the port. When ships arrive from foreign ports where quarantinable diseases exist they usually are required to undergo fumigation for the destruction of rodents and insects which might convey infection.

In order to improve the efficacy of fumigation and to reduce the amount of ship's time required for proper fumigation, the Public Health Service is constantly devising new and improved methods in fumigation procedure.

A recent report issued by the Public Health Service deals with the latest experiments made in connection with the use of the poisonous cyanogen products in the fumigation of vessels. This report accentuates the advisability of using cyanogen products which include a sufficient amount of tear gas to serve as a warning agent.

Free Transport for Juvenile Immigrants to Canada.

The British and Canadian Governments have raised from 17 to 19 the age limit of boys who may be granted free transporation to Canada to take up farm work, and of boys and girls who go to Canada as members of families approved for farm work.

Dr. E. P. Tompkins,

Lexington, Va., has been elected one of the directors of the Kiwanis Club, of that city, for the ensuing year.

Side Streets as Emergency Playgrounds.

Chelsea, Mass., badly needed a new playground but hadn't the money to buy the site, so the park department bought portable swings, slides, seesaws, and a wooden platform for dancing and placed them in side streets during the daytime, storing them away at night.

The Annual Report of the Surgeon General of the U. S. Public Healtth Service,

For the fiscal year 1928, tells of an immense amount of work done by the Service that year. It is stated that health conditions were generally favorable throughout the world during the fiscal year 1928. No pandemic outbreaks of any disease occurred and no country with a modern public health organization was affected by the spread of any of the pestilences. Cholera was more prevalent in India than for the preceding eight years and yellow fever reappeared in west Africa in June, 1928, after several months' absence. The United States reported more cases of smallpox during the year than any other country in the world from which reports were received except India, which testifies to the neglect of our people to utilize vaccination.

Dr. Herbert C. Neblett,

Of the class of '14, Medical College of Virginia, has opened offices in Charlotte, N. C., for the practice of ophthalmology. As a major in the Medical Corps of the U. S. Army, he was recently stationed at the U. S. Military Academy at West Point, N. Y.

How Important is the "Common Cold"?

The New Haven Department of Health reports that over 40,000 school days were lost last year by a total of approximately 7,000 children who were out for periods of three days or more because they had colds.

On Staff of Gill Memorial Hospital.

Dr. John I. Chorlog, of the University of Wisconsin, in the class of '27, has recently become a member of the medical staff of the Gill Memorial Hospital, Roanoke, Va. Dr. Chorlog recently served a general internship at the Chesapeake and Ohio Hospital, Clifton Forge, Va., and took hospital training in Chicago before accepting the position in Roanoke.

Dr. John K. Shumate,

Of the class of '21, Medical College of Virginia, who has recently been connected with the medical staff of the Nopeming Sanatorium, Nopeming, Minn., has moved to Pontiac, Ill., where he has accepted the position of Medical Director and Superintendent of the Livingston County Sanatorium.

Dr. Newbill Honored.

Dr. W. J. Newbill, of Irvington, Va., was honored at dinner on New Year's day by a number of friends and relatives, the occasion being his eighty-second birthday. Music and speeches added to the pleasure of this event.

Chile's Campaign for Sanitary Education.

Nearly 4,000 Chilean teachers are enrolled in correspondence courses in school hygiene given by the Government bureau of health education. The bureau is also giving lectures for teachers, instruction in infant care for midwives, and lessons in child care for Little Mothers' Leagues, and has organized mothers' clubs for the teaching of child care.

The Medical Society of the District of Columbia

Elected the following officers to serve from January 1 to July 1, 1929: Dr. Harry Hyland

Kerr, president; Dr. Wm. H. Hough and Dr. H. Gladys Kain, vice-presidents; and Dr. Coursen B. Conklin (re-elected) secretary-treasurer. Names of the following section chairmen have also been announced: Dr. Clapham P. King of the Section on Internal Medicine; Dr. Tomas Cajigas of the Section on Pathology and Laboratory Medicine; and Dr. Edmund Horgan of the Section on Surgery.

Dr. James K. Gray

Recently resigned as physician in charge of the Davis Clinic, Marion, Va., a hospital for the care of mentally disabled world war veterans, and has moved to Thurmont, Maryland, where he is engaged in the general practice of medicine.

Dr. T. Duckett Jones,

Now at the Good Samaritan Hospital, Boston, Mass., spent the holidays with friends and relatives in Virginia. In addition to his work at the hospital, Dr. Jones is doing private consultation work in Boston and research work in the Harvard Medical School.

Dr. Victor C. Vaughan,

Former dean of the Medical School of the University of Michigan, has moved his permanent home from Detroit, Mich., to Richmond, Va., where he has selected a home near his son's, Dr. Warren T. Vaughan.

Dr. W. O. Bailey

Has returned to his home in Leesburg, Va., after spending several months abroad in postgraduate study in Vienna and Budapest.

Dr. Edward Francis,

Of the U. S. Public Healh Service and well known for his work on tularemia, recently contracted undulant fever while conducting experiments in the Hygienic Laboratory and was confined to the hospital for some time.

Dr. A. L. Winfield,

Richmond, Va., was painfully hurt in an automobile accident, shortly before Christmas, and was in the hospital for treatment for a time.

Dr. D. Hunter Marrow,

Union Level, Va., has gone to Florida, as is his custom, and will spend the winter months at Daytona Beach.

Dr. J. B. Dalton,

After a year spent at the Hospital for the Ruptured and Crippled in New York City, has returned to his home at 1100 West Franklin Street, Richmond, Va.

The Society of American Bacteriologists

Held a most successful meeting in Richmond, Va., December the 27th, 28th and 29th, under the presidency of Dr. Alice C. Evans, of the U. S. Hygienic Laboratory, Washington, D. C. There was a registered attendance of 174, and the papers presented were on a wide range of interesting subjects.

Ames, Iowa, was selected as the 1929 place of meeting and Dr. Ludvig Hektoen, of the McCormick Institute for Infectious Diseases, Chicago, was elected president. Dr. S. Bayne-Jones, of the University of Rochester, Rochester, N. Y., was elected vice-president, and Dr. James M. Sherman, of Cornell University, Ithaca, N. Y., was re-elected secretary-treasurer.

Dr. A. D. Parson,

Located at Ravn, Va., left the latter part of December for New Orleans, La., where he is taking a special course in urology. Mrs. Parsons and their young daughter, Alice Frances, accompanied him.

Annual Report of Surgeon General of U. S. Navy.

Surgeon General E. R. Stitt, of the U. S. Navy, in his annual report for the fiscal year 1928, states that "This bureau has carried on its established policy of endeavoring by every means possible to improve the character of the medical service rendered to the personnel of the Navy, to reduce the incidence of disease, and to render better the hygienic condition of living quarters of officers and men of the Navy." During the year there have been 51 new medical officers commissioned, 47 of whom are internes, while 46 have been separated from the service—31 by resignation, 12 by retirement, and 3 by death. Less sickness and resulting disability were experienced than in most recent years and the general death rate was low, though slightly higher tha nthe remarkably low rate of the preceding year.

Italy's University Courses in Maternity and Infant Care.

A four-months' course in maternity and infant care for graduates in medicine and surgery and for midwives was started in November by the University of Naples. The Italian law of 1925 provides for the establishment of such courses throughout Italy, and hereafter positions in the child-welfare institutions founded or subsidized by the National Children's

Bureau will be given only to persons with diplomas showing satisfactory completeion of one of these courses.

For Sale—

Twenty years' established general practice in a Virginia town of 3,000 and a community of 12,000. Within 60 miles of Washington, D. C., on main line railway. Fine schools and churches. Five hard surface roads outgoing, making this an all closed car practice. Two factories in town. Collections around $7,000 a year and can be increased. Wish to give up general practice. Own half interest with another physician in a $40,000 modern office and apartment building in center of town. Building has electric elevator and steam heat and pays good income. Will sell my interest in building to physician who takes over my practice, or half of my interest, if allowed to continue office for chronic cases, with no house practice. Only good general man need apply. Address No. 139, care this journal.

Obituary Record

Dr. Archille Murat Willis.

Friends of Dr. Willis throughout this State and the whole country were shocked and grieved when they learned of his death on January the 3rd, as the result of a self-inflicted bullet wound. In the morning, Dr. Willis operated as usual and, as soon as he had finished, retired to his private office where he fired the fatal shot. It is stated that he had been greatly depressed recently and committed the act while temporarily unbalanced.

Dr. Willis was born in Alabama, December 10, 1878, and, upon completion of his academic education in that state and later in Virginia, entered the Medical College of Virginia. He graduated from that institution in 1904 and served an internship at Memorial Hospital, Richmond, later doing post-graduate work at Harvard. Upon his return to Richmond, he became associated with the late Dr. George Ben Johnston and with him, founded the Johnston-Willis Hospital in 1909. Upon Dr. Johnston's death in 1916, he became president of that institution. He was also one of the founders of the Parkview Hospital at Rocky Mount, N. C., the George Ben Johnston Memorial Hospital, at Abingdon, Va., and recently of the Community Hospital, at Nassawadox, Va. After graduation, Dr. Willis taught in various capacities at the Medical College of Virginia, becoming professor of surgery in that institution in 1922. Dr. Willis was nationally known as a surgeon and had held office in many medical associations, among which was the presidency of the Richmond Academy of Medicine which had a special meeting to act on his death. His death was a shock to the entire community where he was greatly respected and beloved.

Dr. Willis is survived by his wife who was Miss Emma Gold Hutcheson, of Rockbridge County, Va., and three children.

Dr. Charles Launcelot Minor,

Widely known tuberculosis specialist of Asheville, N. C., died at his home in that place, December the 26th. His death was unexpected as he was believed to be in comparatively good health. Dr. Minor was sixty-three years of age and a graduate in medicine from the University of Virginia in 1898. His wife and three children survive him.

Dr. Robert Hardaway Jones,

Petersburg, Va., died December the 19th, as a result of having been knocked down by an automobile. Dr. Jones graduated in medicine from the University of Maryland, in 1882, and practiced in Petersburg until he retired some years ago on account of his health. His wife and two children survive him.

Dr. Robert Armistead Deane,

Well known colored physician, of Lawrenceville, Va., died in the Petersburg Hospital, December the 9th. He was born in Richmond 38 years ago and studied medicine at Howard University, Washington, D. C., receiving his diploma in 1912. His wife and three children survive him. Dr. Deane had practiced in Lawrenceville for about twelve years and had built up a good practice and was highly respected in his community.

Dr. Walter W. Johnson,

Colored physician of Covington, Va., died December the 12th, at his home in that place. He was fifty-three years of age and graduated from Leonard Medical School, Raleigh, N. C., in 1900. He had practiced in Covington for about twenty-five years, and was a member of the Staunton, Va., colored Masonic lodge. His wife and son survive him.

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DUODENAL ULCER.*

By E. STARR JUDD, M. D., Rochester, Minn.

Duodenal ulcer and grastric ulcer have been described together until recently. Gastric ulcer was mentioned in the medical literature as long ago as 1600 but duodenal ulcer was first described by Travers in 1817. In this report, Travers describes two cases of perforating duodenal ulcer. The first case was typical: sudden perforation of the ulcer, shock, and death of the patient within a few hours. In the second case the patient had had a long period of dyspepsia. The characteristic feature was pronounced in this case; that is the symptoms were relieved by food and they returned about the time the food was leaving the stomach. These two cases of duodenal ulcer, that were proved at necropsy and were reported 111 years ago, are typical of the cases seen today.

In the few years following the report by Travers, several reports of cases were made in different countries; and, as early as 1830, Dr. John Abercrombie, of Edinburgh gave, clearly and concisely, the clinical picture presented by duodenal ulcer. He said: "The leading peculiarity of disease of the duodenum so far as we are at present acquainted with it seems to be that the food is taken with relish and the first stage of digestion is not impeded, but the pain begins about the time when the food is passing out of the stomach or from two to four hours after a meal."

The treatment of duodenal ulcer was not discussed for many years after this. Moynihan says that H. P. Dean recorded the first case of duodenal ulcer that was successfully treated by operation.

The surgical treatment of duodenal ulcer, as well as that of gastric ulcer, started with the researches and experimental work directed by Billroth and carried out by von Winiwater and Gussenbauer. These experiments were performed on dogs in 1875. At this time, Gussenbauer suggested that gastric resection might prove to be a feasible procedure in gastric ulcer as well as in gastric cancer.

It is generally conceded that the stimulus for the surgical treatment of chronic duodenal ulcer was furnished by W. J. Mayo and Moynihan about twenty-five years ago. Since that time, much discussion has come forth on the subject of whether these cases should be treated conservatively by the physician or whether they should be treated by the surgeon as soon as the disease is diagnosed. Clinicians do not all agree concerning what is the best plan of conservative treatment nor are they in accord as to just how long and how rigidly such treatment should be carried out. On the other hand, surgeons have tried many different types of operative procedure in an attempt to relieve the symptoms produced by duodenal ulcer.

Gastro-enterostomy

Gastro-enterostomy, an indirect operative procedure, has been and still is the operation most frequently employed. This procedure is supposed to relieve the condition by modifying the mechanism of the passage of food through the upper intestinal tract, by overcoming obstruction and spasm, and by making changes in the physiologic processes involved. As a result of this operation, many patients have been completely and permanently relieved. Unfortunately, one factor makes this procedure unsatisfactory in a certain proportion of the cases; and this factor is the development of a secondary ulcer in the jejunum, near the stoma formed by the anastomosis of the stomach to the jejunum. It is impossible to state just how frequently this condition occurs, and, so far, there is no way of telling in which of the cases a stomal ulcer is likely to develop. Young persons, who are so commonly afflicted with duodenal ulcer, are more likely to suffer the development of a jejunal ulcer subsequent to operation than are older persons. Preparation of patients before operation, regulation of

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diet, and other after care will not prevent the formation of jejunal ulcer. I have tried very diligently to devise some scheme by which stomal ulcers might be prevented, but so far I have not been successful. Alkalinization of the stomach for a long time after the operation will not prevent them. In a small group of patients in whom I thought there was some likelihood of a secondary ulcer forming, because of the age of the patient and the acuteness of the ulcer, I had an autogenous vaccine made from the organisms recovered from the ulcer and I vaccinated these patients over a considerable length of time after the operation. So far, none has developed a secondary ulcer; but the series is too small and the time elapsed is not sufficient to enable me to tell whether or not this will have any effect. It is not the frequency with which these secondary ulcers occur but the severity of the condition which they cause that makes this a great problem. To perform gastro-enterostomy for a small lesion in the duodenum of a young man, then to have him return because of recurrence of his symptoms after he had had six to nine months of relief, and to find that a new ulcer has formed, is a very unfortunate situation. If it were not for the occasional stomal ulcer, anastomosis of the stomach to the jejunum would be the procedure to follow in all of these cases; in every other respect, it is a satisfactory plan.

Plastic Operation and Excision of the Ulcer

Many plastic operations on the pylorus, in some of which the ulcer is excised at the time, in others of which it is left undisturbed, have been described in the last twenty years. The principle in most of these procedures has been to do away with the activity of the pyloric sphincter, and in this way to overcome pyloric spasm and to change the physiologic processes involved. It is not my purpose at this time to discuss the different operations that have been performed on the pylorus but I would like to say something about the principle that underlies them.

A number of years ago, in the clinic, we started to excise duodenal ulcers in the cases in which the duodenal cap was free and easily accessible. The results in these cases were fairly satisfactory. We have followed a series of cases for a long time. In those patients who did not do very well, the difficulty seemed to be a residual dyspepsia that was not as severe as the similar disorder that had existed before operation; nevertheless, they were not completely relieved of discomfort. I thought that this might be attributable to the fact that there was still a spastic pyloric sphincter and next, I added to excision of the ulcer a Ramsted incision of the sphincter muscle of the pylorus. I am not sure that this resulted in any higher proportion of satisfactory results, because I soon found that in the adult with a normal pyloric sphincter, incision of this muscle did not do away with its tendency to become spastic. Roentgen-ray examinations made after the operations showed that the contents of the stomach passed through the pylorus under the control of the sphincter in very much the same way as that observed in the cases in which the sphincter had not been incised.

Because of these results I developed a more extensive operation on the pyloric sphincter. At the present time, in the cases of duodenal ulcer in which it is feasible, I excise the entire cap of the duodenum, with the ulcer, and include in the excision the anterior two-thirds of the pyloric sphincter muscle. The purpose of the operation, as I perform it, is to get rid of the ulcer, of the duodenal cap which is the most frequent seat of ulcer, and, at the same time, to take out enough of the pyloric sphincter to destroy its sphincteric activity. When the operation is completed by joining the stomach and duodenum together, the two structures have been converted into one cavity. The contents of the stomach pass directly into the duodenum, and the contents of the duodenum easily regurgitate into the stomach. With this plan, everything has been done that can be done by gastrojejunostomy and the patient has not been exposed to the possibility of a stomal ulcer. Because of fixation or marked deformity of the duodenum, this operation cannot be done in all cases; but in those in which it can be performed, the results have been satisfactory.

It is inconceivable to me that resection of the stomach should ever be necessary in patients with chronic duodenal ulcer. As I have watched the results of surgical procedures, it has seemed to me that the operations that are based entirely on producing changes in physiologic processes have been very unsatisfactory. The most logical operation, for any disease that requires operation, is that which removes

the lesion that produces the trouble and which accomplishes the result with as little disturbance as possible of the surrounding structures. I am very glad to know that some of the English surgeons, and also some of those on the continent of Europe, have been misquoted concerning their ideas regarding radical operations for duodenal ulcer. It seems to me that after this wave of enthusiasm for radical operation, surgeons are coming back very quickly to the conservative plan of treatment. Possibly, as a result of these extensive operations, something may have been learned about the inflammation that exists in the stomach in all cases of ulcer; but so far it has not been possible to put this to any use in furthering knowledge of the pathogenesis of these ulcers.

Pathogenesis

Knowledge concerning duodenal ulcer has progressed to about the same point as that concerning a great many other conditions. Duodenal ulcer can be diagnosed in almost every case in which it is present. Some plan of treatment that will offer relief in most of the cases can be followed out. It seems to me that, from now on, progress is going to be made from further studies in pathogenesis. It is true that, as a result of a better understanding of the clinical picture, many of the ulcers are recognized earlier than formerly they were known to be present. These early cases can be kept under control and the patients can lead an active useful life. The only handicap is that, during two or three periods in the year, it is necessary to watch the diet very carefully. In our own staff at the clinic, composed of several hundred physicians and surgeons, there are between twenty and thirty men who apparently have duodenal ulcer. The roentgen-ray is positive in these cases, and each year the patients have a few attacks of dyspepsia. Between these attacks they are free from trouble.

The problem of the origin of duodenal ulcers has been studied from clinical, experimental, anatomic and pathologic points of view. Cohnheim divided the problem under two headings; namely, the cause of the original defect and the cause of the chronicity. This division of the problem simplified it in some ways. That an acute ulcer may become chronic is a reasonable assumption; nevertheless, it is an open question whether the occurrence of chronicity involves fundamental principles other than those involved in the origin of the defect.

During the first decade of this century the question of the origin of ulcer centered around the ideas of Rokitansky and Berthold. These investigators believed that ulcers are caused by the action of localized vascular disturbance and consequent focal nutritional changes combined with the digestive action of gastric secretion on the devitalized tissue. In principle, this hypothesis is held today.

Aschoff stresses the Cohnheim theory and attempts to explain the cause of erosions, on one hand, and the cause of chronicity, on the other. The factors which tend to produce chronicity are grouped together under the mechanical-functional theory of Aschoff. Furthermore, these two considerations of mechanical erosion and chemical disturbance formed the basis of Mann's experimental investigations of peptic ulcer. The most satisfactory method of producing experimental chronic peptic ulcer is the one devised by Mann. According to him the following points are significant:

1. The chemical and mechanical factors appear to be important in the development of peptic ulcer.
2. The time necessary for an ulcer to develop and to become chronic is relatively short.
3. The ulcer begins at the surface of the mucosa.
4. All complications observed in ulcers in human beings have been noted in experimental ulcers.
5. The ulcer heals readily when protected from the gastric contents.
6. The healing process is characteristic.
7. If for any reason the granulation tissue in the base of an ulcer is injured, profuse hemorrhage may occur.
8. Observations on the process of formation and the process of healing of ulcers disclose the reason for chronicity.

Mann says the ulcers become chronic because the new cells formed in the process of healing are destroyed by the acid or swept away by the passage of gastric contents before they have an opportunity to establish themselves as an integral part of the tissue.

According to the neurogenic theory, ulcers are the result of dysfunction of the vegetative nervous system. Nervous factors produce spasm, in localized areas either of the muscle

or of the vessels, and circumscribed ischemia of the mucosa results. From this, localized mucosal defects arise. Such defects tend to produce further nervous irritability and thus to favor chronicity. Konjetzny's theory of the inflammatory origin of ulcer is based on gross and microscopic study of tissue resected at operation. A few years ago, many observers had great interest in this theory. At present, however, this interest has lessened, and it seems as if the likelihood that this theory will explain the pathogenesis of ulcer is not as great as formerly it was thought to be. Konjetzny, Orator and Puhl, and others observed that in many cases of gastric and duodenal ulcer there is more or less extensive gastritis and duodenitis.

Undoubtedly, duodenitis is a surgical and pathologic entity but its relationship to chronic duodenal ulcer is not clear. The pathologic data in cases of duodenitis call attention to the work of Rosenow, for the lesions closely resemble those which he produced in animals by injecting specific strains of streptococci. Puhl was able to demonstrate organisms in tissues from cases of gastritis and duodenitis but he could not culture them.

Ulcers form in the jejunum not only following gastro-enterostomy for ulcer of the duodenum but also after resection of the stomach for duodenal ulcer. Furthermore, ulcers recur in the jejunum after resection of the stomach for duodenal and jejunal ulcer. Recurrence of ulcer in the jejunum has been known to occur repeatedly, even when several resections have resulted in the removal of the greater part of the stomach. These experiences tend to support Mann's experimental work and the combined chemical and mechanical theory of the cause of ulcer, but they seem to disprove the idea that the removal of the lesser curvature will prevent the formation of ulcers. Experience seems to show that there is a tendency for the formation of ulcers in certain individuals and that no matter what treatment is undertaken recurrence is almost certain to take place. The factor responsible for this has not been determined and its discovery will yield valuable information concerning the etiology and pathogenesis of ulcer.

Duodenal ulcer is many times more common than gastric ulcer, and it occurs frequently in young men. From the nature of the lesion it seems probable that duodenal ulcer heals more often of its own accord than does gastric ulcer. In many instances the duodenal lesion is a localized area of inflammation. Sometimes the process is more diffuse, and extends throughout a considerable part of the upper third of the duodenum. Walton says that acute duodenitis occurs frequently in students under nervous tension such as preparing for an examination and that it heals promptly when diversion is supplied. There are undoubtedly two separate and distinct lesions in the duodenum; one is a localized area of inflammation, and the other is a true ulcer. Under no condition does a carcinoma originate in the duodenum, and these lesions must be considered not only benign, but also comparatively simple.

Conservative Treatment

In view of these facts, it seems to me that conservative treatment is definitely indicated, and that if many of these patients were aware of their condition early in the trouble they could be kept comfortable with very little effort or inconvenience on their part. Alvarez says that during the last ten years he has been impressed with the fact that so few of the patients with duodenal ulcer whom he has seen have ever had any treatment which a specialist would regard as adequate. In many cases the diagnosis had not been made; but even when it had been made, most of the patients had had to suffer for years with nothing more than a prescription for alkalies and a warning against the use of meat or greasy foods. He further says that as so often happens, one of these patients would return to report that since he had taken food every two hours he had lost all distress. I think everyone is aware of the fact that not enough attention is paid to mild dyspepsia. If an accurate diagnosis is made early and the proper treatment, which is very simple, is instituted, many of these patients would be entirely relieved.

The indications for operating in cases of chronic ulcer of the duodenum depend on several factors. The length of time symptoms have existed should be considered. If they have been present for a long time and if the patient has had several periods of good dietary management, without relief, operation should not be postponed. If the symptoms have been present for a short time only, and conservative treatment has not been instituted, it should be instituted at once. There is plenty of evidence

to show that some ulcers heal spontaneously and also that dietary management, if started before the condition becomes chronic, may result in complete relief of symptoms and possibly in the healing of the ulcer. The age of the patient should be taken into consideration. A young person, with a short history and mild symptoms, should be placed on a dietary regimen for a considerable period. The severity of the symptoms in any case will help to determine the plan to be followed, because, if there is a constant tendency to perforation or bleeding or if there are severe gastric upsets that are not relieved quickly by diet, operation is indicated. The nervous tendency of the patients also should be taken into consideration. Patients with a highly sensitive nervous system do not bear well any type of operation on the stomach. Very rarely perforation occurs during most rigid treatment. It is a mistake, however, to continue dietary treatment if nothing is being accomplished and if the symptoms return with the least indiscretion. About 65 per cent of the patients with duodenal ulcer seen at the clinic are advised to submit to operation.

Summary

Dudoenal ulcer is a very common condition. It is always a benign lesion. Unless there is a tendency toward perforation, hemorrhage, or obstruction, there is no contraindication to trying medical management. Many of the early ulcers heal spontaneously. Other early ulcers undoubtedly can be encouraged to heal by conservative treatment. In many instances medical management simply brings about relief of symptoms, and the trouble returns as soon as the regimen is discarded. The results of the surgical treatment of duodenal ulcer are sufficiently satisfactory to justify operation. It would seem as though about every conceivable plan for operating on these patients has been tried out. From a study of the results, the indications are that the more conservative the operation the better the prospects for satisfactory results.

In certain individuals ulcers continue to form following any type of operation. These individuals do not respond to medical management. By a more intensive study of cases of this type it may be possible to get a better conception of the pathogenesis of duodenal ulcer. Progress in the treatment of these cases will be brought about by a better understanding of the pathogenesis.

GASTRECTOMY FOR GASTRIC ULCER AND GASTRIC CANCER.*

By J. M. EMMETT, M. D., Clifton Forge, Va.

In the absence of definite proof of the etiology of ulcer it is evident that the relative value of the various surgical procedures, in their ultimate analysis, must be determined by the final results obtained and they should not be dependent upon the uncertainty of the various causes of ulcer. The multitude of operative procedures in vogue today confirm the opinion that no specific surgical treatment has been established which will meet all our demands. The literature which is being built up around gastric surgery for the treatment of peptic ulcer is confusing and uncertain. One large western clinic reports, following gastro-enterostomy, the occurrence of gastro-jejunal ulcers in three per cent of cases and one eastern clinic reports thirty-three per cent of gastro-jejunal ulcers. Such reports are confusing and they create a great dilemma in the mind of a young clinic which is seeking to standardize, in a manner, its stomach surgery. We have no positive convictions as to when the regime of medical treatment should be discontinued in ulcer patients and when surgical procedures should be employed. We recognize, of course, certain definite indications for the employment of surgery in peptic ulcer, but the vast majority of ulcer patients might just as well be handled medically as surgically.

During the past year we have operated upon only nine and three-tenths per cent of our proven ulcer patients. Because of the many unfavorable surgical results obtained in the older gastric cases, this special branch of surgery is not in particularly favorable repute. Frequently, patients who have been subjected to operation have not experienced their anticipated improvement and such patients have been very reticent to recommend surgery for the relief of ulcer symptoms in candidates for surgical treatment. The general practitioner has not been sufficiently impressed by our good re-

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sults to encourage him to advise his ulcer patients to consider surgery, except as a treatment of last resort. The surgeon will certainly never be able to convince the medical man that indurated ulcers of the stomach and duodenum are surgical diseases, until he can demonstrate a lasting and permanent cure following operation.

Any of the generally employed surgical procedures, such as gastro-enterostomy, sleeve resection, or subtotal gastrectomy, disturb very materially the normal gastric physiology. Efficient control of ulcer symptoms seems dependent upon maintaining gastric motility and, to a greater extent, upon our ability to reduce the gastric acidity in some manner which is permanent. Ulcers of the duodenum which are producing obstructive symptoms present, clinically, a different problem and, when proper drainage of the stomach is established and rest is assured the pylorus, the oedema around the ulcer rapidly subsides, the pylorus becomes patent, and relatively normal gastric physiology ensues.

We have been able to follow up, with a fair degree of accuracy, a group of twenty-five of our patients upon whom we have done gastro-enterostomies—fourteen of whom had gastric ulcers and eleven had duodenal ulcers. Two of the patients with gastric ulcers have developed proven gastrojejunal ulcers. One duodenal case has a similar lesion. Three of our gastric patients are having various degrees of digestive distress, meaning that they are not entirely symptom free. Minor digestive distress is observed in only one of the duodenal cases. From our limited analysis few deductions can be drawn, but grossly our results agree with observers who have had greater experience.

It is generally agreed that the removal of the distal third of the stomach, including the pylorus and a portion of the first part of the duodenum, is the only reliable method of producing a state of anacidity, and if one lends himself to the belief that gastric ulcers thrive in an acid media, or its progress is in any way affected by high acidity, then the operation of subtotal gastrectomy is certainly indicated in large gastric lesions. Gastric motility is less frequently altered after a subtotal gastrectomy than it is following many of the palliative procedures.

Further indications for the selection of subtotal gastrectomy in gastric ulcers are found when one considers the undeniable fact that gastric ulcer plays an important part sometimes in the production of gastric malignancy; that the palliative operations are less constant in their ability to cure gastric ulcer, and that many patients who have had gastro-enterostomies still go on to gastric perforation and hemorrhage.

About eighteen months ago we first performed a subtotal gastrectomy for the relief of gastric ulcer. Since that time we have had occasion to do this operation on four other such patients. The results obtained in this very limited experience have been so satisfactory that we are encouraged to report them. Prior to our employment of subtotal gastrectomy for the treatment of ulcers we were accustomed to feel that our stomach patients were rarely ever entirely normal after operation. The patients upon whom we have done partial gastrectomies are happy, well, and absolutely symptom free. None of them, even with unrestricted diet, complains of symptoms suggesting crippled gastric digestion.

The early advocates of subtotal gastrectomy for the treatment of gastric ulcer claimed that these operations were never followed by ulcers at the anastomosis. Sporadic reports of such complications now are appearing in the literature, but we are encouraged to feel that this complication is not so constant following partial gastrectomy as was experienced following the palliative operations. We feel that we may well choose the more extensive operative procedures, regardless of the slightly higher immediate operative mortality, since the final operative results are much more satisfactory.

I do not wish you to infer that I feel gastro-enterostomy has no place as an elective surgical procedure, because, unless some more rational palliative measure is developed, I shall always feel that gastro-enterostomy may be practiced with benefit upon a large group of patients. However, I feel more emphatically each year that the greatest number of peptic ulcers are, even yet, best handled by intelligent medical management. When surgery is indicated and employed, I feel that we should certainly be able to offer our patients a fair chance of a permanent and a certain cure, and that we are positively obligated to avoid the possibility of increasing the violency of their symptoms as the result of our treatment.

Observers generally are of the opinion that gastro-enterostomy is followed by a very satisfactory percentage of cures in duodenal ulcers, and we have felt satisfied to continue with its employment in this particular type of lesion. I am not sure, however, that even here a change in our policy might not prove beneficial to the mass of such patients.

Whenever possible we have done the typical Billroth I operation. It has been employed in every case where there is sufficient serosa on the posterior wall of the duodenum to insure a safe approximation of the serous surface for the anastomosis. This particular operation disturbs, to a lesser degree, normal gastric physiology, it re-establishes the normal continuity of the gastro-intestinal tract and, as has been shown by X-ray studies, it favors the development of a new sphincter which possibly effects rhythmic contraction of the stomach. When the motility of the duodenum will not admit of a direct end to end anastomosis with the stump of the stomach, then we have done the Polya modification of the Billroth II operation.

I am encouraged to discuss briefly the problem of subtotal gastrectomies in the treatment of cancer of the stomach because of the change in my own reactions towards this subject. It has not been many years since I felt that patients suffering with cancer of the stomach were hopelessly crippled and I made little or no effort to relieve them. Occasionally we did do gastro-enterostomies upon these patients, but the vast majority of them died in the hospital. We have under observation at the present time one patient whom we operated upon and did a gastro-enterostomy for malignancy of the stomach about two years ago. This man made an immediate satisfactory operative recovery and has attended to his duties as a merchant until six months ago when his gastro-enterostomy gradually became occluded as the result of the extensive cancer invasion. In this particular case the extent of the lesion prohibited a subtotal gastrectomy, but I feel reasonably sure had it been physically possible to have removed his lesion at the time we operated upon him that this man would probably have gotten a permanent cure.

In advocating surgical treatment for cancer of the stomach we need not fear the criticism of our colleagues because the medical profession is unanimous in its opinion that only surgical intervention can cure these victims. There is no recorded instance of anyone having cured cancer of the stomach in any other manner. Balfour has reported fifty-three per cent cures following subtotal gastrectomy for cancer of the stomach, when the lesion has been limited to that organ. He further reports twenty per cent of cures when there was a definite malignant metastasis in the perigastric lymph glands. He reported an operative mortality of only five per cent. Few of us could expect this low mortality rate to begin with, but with the recent improvement in surgical technique for the practice of this procedure we may be able to employ this operation with a mortality of which we need not be ashamed. It should further be remembered, however, that we are dealing with a disease which claims one hundred per cent of its victims.

I feel that the medical profession has an erroneous opinion as to the comparative malignancy of cancer of the stomach. Dr. Margaret Warwick has recently reported in *Annals of Surgery* detailed necropsy findings in 176 fatal cases of cancer of the stomach. She found that twenty-three per cent of these fatal cases did not have evidences of metastasis in any portion of the body. Further evidence is found in her report to substantiate the opinion that cancer of the stomach is ordinarily a slow growing disease and that it is usually the terminal cause of death in its victims and that intercurrent disassociated disease rarely plays an important part in the production of death.

The relative location of the lesion in cancer of the stomach determines largely the early production of symptoms; that is, a large lesion may exist along the wall of the stomach without producing symptoms, while a comparatively small lesion located at the pylorus may produce early gastric obstruction and consequent starvation without surgical intervention.

The diagnosis of cancer of the stomach may be accurately made in practically all cases. Fluoroscopic study by a trained roentgenologist will give unmistakable evidences of the presence of large gastric lesions. Of course the X-ray will not determine the metastatic involvement. I am inclined to feel, however, that, unless the case is a terminal affair, then an exploratory laparotomy should be resorted to after the immediate safeguards have been

thrown around our patients. I am convinced that many apparently advanced cases, with massive lesions in their stomachs, may be resected and years of freedom offered them, even granting permanent cures may not always be anticipated.

I believe that the particular operation of choice in cancer of the stomach should be along the line of the Billroth I when practical. When the motility of the duodenum prohibits such an anastomosis, the Billroth II operation, with the modifications of Polya and Balfour, will prove entirely saisfactory. I am impressed with the two stage operation which has recently been devised by Dr. Balfour and I believe that it will prove of tremendous advantage in the treatment of debilitated gastric cancer patients, since the primary stage of the operation will enable us to prepare our patients for the intake of food so that their physical condition may be satisfactorily built up for the final operative procedure.

BIBLIOGRAPHY.

Balfour, Donald C.: The Incidence and Treatment of the Complications of Chronic Gastric Ulcer. *Collected Papers of the Mayo Clinic.* 1927, Vol. XIX, 129-135.

Berg, A. A.: The Radical Surgical Cure of Gastric and Duodenal Ulcer. *Surgical Clinics of North America*, 1925, Vol. V, No. 1, 49-91.

Louria, Henry W.: The Surgical Treatment of Gastric and Duodenal Ulcer. *Surgery, Gynecology and Obstetrics*, 1928, Vol. XLVII, 493-502.

Balfour, Donald C.: The Technique of Partial Gastrectomy for Cancer of Stomach. *Surgery, Gynecology and Obstetrics*, 1927, Vol XLIV, 659-668.

Warwick, Margaret: Analysis of One Hundred and Seventy-six Cases of Carcinoma of the Stomach Submitted to Autopsy. *Annals of Surgery*, 1928, Vol. LXXXVIII, 216-227.

UNUSUAL DUODENAL CONDITIONS AS DEMONSTRATED BY X-RAY.*

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This communication is really more a series of unusual case reports than a true paper. During the last three or four years, the X-ray Department of the University of Virginia Hospital has had some rather interesting duodenal cases differing from the straight run of ulcers, and we are presenting this group to bring out the fact that lesions other than ulcer do involve the duodenum. Among the most of our medical friends, when the word duodenum is mentioned, the majority respond "ulcer". In our experience, we have found other pathological conditions to be not infrequent. These are picked up in the course of a regular gastro-intestinal series and require no special examination.

Carcinoma of the duodenum itself is quite rare, but in the last three years, we have had two cases of malignancy in which the duodenum was involved. The first case was an old colored man 85 years old, with a constant duodenal deformity, which was thought to be ulcer. He was discharged, died two months later, and an autopsy showed generalized abdominal carcinomatosis with invasion of the liver, the hepato-duodenal and gastro-hepatic ligaments and the pancreas. These masses pressing into the duodenum gave our deformity. There was no involvement of the stomach.

The second case was a colored woman 69 years old, who showed a marked constant deformity of the duodenum, and a 60-75 per cent gastric residue. The natural diagnosis here again was duodenal ulcer, but the first case made us a little cautious, and we qualified our usual flat-footed diagnosis by stating "probable" duodenal ulcer. Operation done on account of the obstruction showed a "carcinoma of gall-bladder which had invaded the intestine," quoting from the operative note.

Diverticula of the duodenum are by no means rare, and many times are symptomless. These diverticula may be either true congenital diverticula, or may be sacculations arising from the duodenal wall secondary to penetrating ulcers. We know of no differential diagnostic points as far as the X-ray examination is concerned except that congenital diverticula are usually in the second and third portion, ulcer in the first portion. These diverticula vary in size, number and distribution. When small, they may easily be confused with the valvulae conniventes, and doubtless we have overlooked many of these small outpocketings.

For present consideration, we have selected three cases showing rather large diverticula. The first case is a man 73 years old, who had had stomach trouble since he was 15 years old. He had gone the rounds of practically all the gastro-enterologists in the East, and had had every diagnosis made except diverticulum of the duodenum. Fluoroscopic ex-

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amination showed a smooth walled, large projection from the wall of the second portion of the duodenum, which was distinctly separate from the duodenal lumen. This case was not operated, since his symptoms were of insufficient gravity to warrant a big operation at his age.

The second case of diverticulum is a woman 71 years old who has had a stomach trouble for 40 years, who showed two extra-luminal pockets. There were also diverticula along the colon in this case. The third case also showed both duodenal and sigmoid diverticula.

We will present two cases which illustrate why occasionally X-ray diagnosis of duodenal ulcer is not confirmed by operation. Both of these cases showed definite constant duodenal deformities. The first was examined by one of us (Archer) in 1924 and showed an enormous duodenal bulb with an incisura on the lesser curvature. In 1927 this case was reexamined and showed a still larger first portion of the duodenum with an apparent pocket. On account of the patient's rather severe symptoms, the referring physician advised operation. When explored, this patient showed only a red stippling of the portion of the duodenum noted as pathological on X-ray examination. This whole area was excised and a gastro-enterostomy performed. On the inner surface of the excised area many small superficial erosions were seen. The second case of this group showed much the same appearance both from the X-ray and operative examinations. The stippled area in this second case was also excised. Microscopic examination of sections from both cases showed erosion of the mucosa and muscularis with round cell infiltration.

One quite interesting case was that of a woman 39 years old who had had "stomach trouble" for one year. X-ray examination shows a spastic pylorus with a very slight irregularity in contour which could be either spasm or ulcer. There was a gastric residue of about 20-30 per cent at six hours, at which time the stomach should be empty. The patient's symptoms became progressively worse, and she was explored with a pre-operative diagnosis of probable small ulcer in the pyloric ring. At operation the pylorus was spastic and markedly thickened, but no ulcer was demonstrated on either the exterior or interior of the stomach or duodenum. A pyloroplasty after the method of Judd, Horsley and others was performed. The patient has been entirely relieved since then. This is the second case of this character which we have observed. In a talk with Dr. Alexander Moore, head of the X-ray Department of the Mayo Clinic, he stated that they had operated several similar cases and that pyloroplasty had relieved the symptoms.

Another unusual case is a man 33 years old who presented an obstruction in the second portion of the duodenum with an enormously dilated bulb, and a very large twenty-four hour gastric residue. The interesting feature of this case was the absence of vomiting in a case of almost complete obstruction, the patient complaining only of gastric discomfort and a "heavy feeling" after meals. At operation a very marked constriction of the second portion of the duodenum was found, apparently due to ulcer.

Summary

(1) Lesions other than ulcer are not infrequently found in the duodenum.

(2) All niche-like deformities of the duodenum are not ulcer, and if the case suggests malignancy from the clinical standpoint, the patient should be explored.

(3) True diverticula sometimes give symptoms and are not very rare.

(4) Periduodenitis may give a constant deformity of the duodenum similar to ulcer, due to spasm in the muscularis which is not present at operation, which shows only ulceration of the mucosa.

(5) Certain cases of partial pyloric stenosis, strongly suggesting pyloric ulcer, are due to thickening and spasticity of the pylorus.

Discussion.

Dr. J. W. Preston, Roanoke: I am sure I express the sentiments of all of you when I say to Dr. Judd that we certainly appreciate his coming down to be with us today. His paper will be very valuable to all of us, I am sure, because Dr. Judd is recognized everywhere as an authority on duodenal conditions. We certainly thank you, Dr. Judd.

Dr. A. L. Gray, Richmond: I have been very much interested in these case reports by Dr. Archer, especially the case (a slide of which he showed) which seemed to present a pyloric obstruction, yet there was no demonstrable lesion. I am satisfied that on Tuesday morning I reported a case identical almost with this one. We shall occasionally have an almost complete pyloric obstruction, in which we cannot demonstrate an actual deformity in the contour either of the duodenal bulb or on the gastric side.

While conditions involving the bulbus duodeni are perhaps more frequently correctly diagnosed than in any other portion of the gastro-intestinal tract, this

is not true of the duodenum beyond the bulb. Fortunately, ulcers are thought to be rare in the duodenum distal to the bulb, but how often symptoms more or less typical of duodenal ulceration are due to undiscovered ultrabulbar ulcerations is an open question. It is usually impossible to obtain a sufficiently well filled duodenum to exclude the presence of a lesion involving only the duodenal wall; in fact, a fully distended duodenum is usually indicative of obstruction distal to the filled portion.

The most frequent deformities of the first and second portions are the result of periduodenal adhesions resulting either from ulceration or other inflammatory condition of the duodenum or of a pericholecystitis from a diseased gall-bladder. Occasionally, a definite obstruction occurs from bands, congenital or acquired, at the duodenojejunal junction; and these may give rise to severe symptoms which are relieved only by surgical procedure. These are, of course, demonstrable only by a careful X-ray study of the transverse portion of the duodenum, noting the facility with which the meal passes into the jejunum, the degree of distention, shape, and conformation. This condition was brought to the attention of roentgenologists in a report of clinical cases by Dr. H. M. Imboden, of New York, about five years ago.

Diverticula, as Dr. Archer has said, are not at all rare in this portion of the alimentary tract; and unless there is an accompanying inflammatory condition they give rise to no distressing symptom and are usually ignored.

Occasionally, the ampulla of Vater fills with the opaque medium, which it may retain after the small intestine has emptied. It may be quite difficult to distinguish such a condition from a duodenal niche from an ulcer or from a diverticulum, but its location and size are usually sufficient to enable one to make the differentiation.

A study of the course of the duodenum and the behavior of the meal in its course through the duodenum may and, in fact, will often reveal the presence of a tumor of the head of the pancreas. An enlarged Riedel's lobe may also produce duodenal deformity, and of course this is true also in some cases of carcinoma of the liver or other portions of the bile tract.

Dr. Stuart McGuire, Richmond: I have practically nothing to add to what Dr. Judd has said, and I discuss his paper chiefly to show my appreciation of the honor he has done our society by coming so long a distance to attend our meeting.

We have had two papers this morning, one on duodenal ulcer and one on gastric ulcer. I am glad there were two papers and that the conditions were not discussed together, as is often done, under the term "peptic ulcer." Duodenal and gastric ulcers differ in their symptoms, in their pathological tendencies, and in their indications for treatment. What I am going to say will be limited to duodenal ulcer.

All cases of duodenal ulcer do not require operation. Many patients can be cured by medical treatment, and others can be kept on their feet in reasonable comfort by proper medical management. Dr. Judd tells us that there are now twenty or thirty members of the staff of the Mayo Clinic who have duodenal ulcer. These men are at work and will not be operated on as long as they do well. Now, what are the indications for operation for duodenal ulcer? The first is a rebellious temperament, which makes the patient unable or unwilling to observe the prudence which is necessary to prevent discomfort. The second is induration and contraction of the ulcer, which produces mechanical deformity, and, possibly, obstruction at the pylorus.

Two types of operation are done for duodenal ulcer. The first is an indirect one, consisting in making a new opening by a gastro-enterostomy. The second is a direct one, consisting in the removal of the ulcer by some type of pyloroplasty. Some surgeons are very partisan in their views and, in advocating one type of operation, criticise and point out every possible objection to the other. The result of this contention among surgeons has been to give all surgery for duodenal ulcer a bad name. This is as much to be regretted as it is undeserved. There are some cases in which a gastro-enterostomy is clearly indicated, and there are other cases where a pyloroplasty is the best operation to employ. No surgeon should be wedded to one operation. A patient should not be fitted to the operation, but the operation should be fitted to the patient. I know from practical experience that a properly selected and properly executed operation for duodenal ulcer will give complete relief in ninety per cent of the cases.

Dr. J. Shelton Horsley, Richmond: I know we are all greatly interested in this symposium on peptic ulcer and are deeply grateful to Dr. Judd for his clear exposition of the subject. I think Dr. McGuire has struck exactly right the keynote in this thing; that is, to use the operation which fits the case. There have been medical men, and perhaps still some exist, who say that practically all peptic ulcers should be treated medically. That is just as much an error as to say that all peptic ulcers should be treated surgically.

All peptic ulcer patients should have medical treatment, either before the operation, or after, or both. The acute ulcers are cured with medical treatment, particularly acute ulcers of the duodenum. Stomach ulcers are more difficult to cure, and there is always the possibility of cancer. Just what that possibility is, opinions differ. McCarty, of the Mayo Clinic, said once that about 65 per cent of gastric ulcers show histological evidence of cancer; on the other hand, Ewing goes down to as low as 2 per cent. Conservative men like Finney say 15 per cent. In a very careful study at the Peter Bent Brigham it was shown that there is a type of cancer that can exist as an ulcer, or else there is a cancerous degeneration, which amounts to the same thing, in 20 per cent of all cases diagnosed as chronic gastric ulcer. If an operator goes in to treat these patients surgically with only one operation, one string for his bow, the patient is in a somewhat precarious condition. It is probably better to treat that patient medically. But when the patient has had reasonably intelligent treatment for two or three months or possibly half a year and still has symptoms, what are you going to do about it? Are you going to be a Christian Scientist, as Dr. Raiford said this mornnig, and forget it? You have to select the type of operation that will best suit the individual indications. Then, after that, what are we going to do? What do you do when you have a bad fracture? Immediately after you set it you would not tell the patient to jump around. You follow biological rules and laws for physiologic rest and apply a splint. So in these cases, after the pathology has been removed they should have intelligent treatment in the way of diet that will rest the stomach as much as possible for at least several months after operation. To continue it all the time is unwise.

In the matter of pyloroplasty, I have been doing for about ten years an operation that perhaps most

of you are familiar with. This operation is indicated only in small duodenal ulcers which cannot be cured by medical means and which are located in the first part of the duodenum. If it is a large ulcer, infiltrated, or with adhesions, then some other type of operation ought to be done.

Reducing acid in the gastric juice is all right in a way, but in patients with a little gastritis and a small duodenal lesion it does not appeal to your common sense to take out more than half of the stomach and make the patient suffer from achlorhydria all his life. Continuous achlorhydria is by no means free from many potential dangers. You would not do an amputation at the knee joint for ingrowing toe nail. You have to suit the operation to the individual case.

Dr. Hugh Trout, Roanoke: I want also to join in thanking Dr. Judd for coming to Virginia.

Dr. McGuire, of course, hits the nail on the head, as he always does; he epitomizes the situation exactly. In our personal experience we have found that our percentage of recurrent jejunal ulcers has been markedly decreased by having these cases come back once a month so that we can follow them up medically, also have gastric analyses and X-rays made, making them understand that for a period of one year they are still under treatment, and also impressing on them the necessity of not breaking training. We have had a number of catastrophes at Christmas time, and Christmas time is a season we dread for these cases.

Dr. E. Starr Judd, Mayo Clinic, Rochester, Minn., closing the discussion: I just want to say that I have enjoyed coming down to Virginia very much and have certainly enjoyed hearing the discussion of these different points. I was very much interested in Dr. Emmett's paper on resection of the stomach for gastric ulcer and also in Dr. Archer's paper.

I think Dr. McGuire and Dr. Horsley brought out the principal points which I wanted to emphasize in this paper. I have been very much opposed to the term "peptic ulcer," with all due apologies to Dr. Horsley, and also to the term "gastroduodenal ulcer," because, as Dr. Emmett stated in his paper, gastric ulcer and duodenal ulcer are two entirely different conditions. While peptic ulcer is a good word, the difficulty is that it throws these two different conditions together.

Our experience has been, as Dr. Emmett reported, that a much more radical procedure is indicated. In the first place, as he said, the first thing is to get rid of the ulcer. No matter how short the duration or how slight the symptoms, we never know the nature of that ulcer until it has been studied histologically. To my mind the question of whether a gastric ulcer becomes cancerous is not the important thing at all, but that we are not able to tell whether it is cancer until we take it out. To my mind, the excision of gastric ulcer alone does not give satisfactory results. In our experience with gastric ulcer it is a question of getting rid of the gastric ulcer, and the solution there, as Dr. Horsley said, is not in one particular type of operation. If it is more satisfactory to resect the stomach and if it can be done with less operating and is more satisfactory to the patient, then it is better to do that than to do an excision and gastroenterostomy. I think gastric ulcer and duodenal ulcer are two different problems. Such operations as gastro-enterostomy do not cure cases of gastric ulcer as they do those of duodenal ulcer.

While we have had some cases that might be called primary cancer of the duodenum, we had to stretch our imagination a little bit. They did not in any way resemble ulcer, at any rate. Cancer does not have to be taken into consideration in the duodenal ulcer cases, but it must always be taken into consideration in the treatment of the gastric ulcer.

In our experience, also, duodenal diverticula are practically always associated with ulcer. The deformity that results from the diverticulum seems to be a part of the ulcer process. In other words, in practically all of the cases we have operated upon for diverticula we have found ulcer present.

I have been particularly interested in the subject of spastic pylorus. It has been surprising to me how often the roentgenologists are able to tell us there is a small ulcer at the pylorus which we cannot find until we open the abdomen.

Regarding the medical treatment of duodenal ulcer, I particularly wanted to mention those cases on our staff that we know have duodenal ulcer. I think there is no question about it. They have periods of dyspepsia at intervals during the year. They can be just as careful as they want to in every way about their diet, but they have periods of dyspepsia. That passes off in a few days, and then they can eat anything they want and be perfectly free from dyspepsia. It seems to me it is a clinical problem to be worked out by the clinician. I think these cases should be kept under medical management as long as they can be. If they are not having hemorrhages, not having sharp pain, and are amenable to management, then keep them under medical treatment; if not, use surgery. Young people, especially, are apt to have secondary ulcers. In bleeding duodenitis, if there has been only one hemorrhage I think we might try medical treatment, but if the patient has another hemorrhage the ulcer should be excised.

Regarding work on the sympathetics, there is very little I can say about it except that some men in the Clinic are very much interested in the results they get in duodenal ulcer cases by section of the sympathetics from the cornua running all the way down to the pylorus. Dr. C. H. Mayo is particularly interested in it.

Dr. V. W. Archer, University, closing the discussion: I have very little to add except to say that what I wished to imply in speaking of carcinoma involving the duodenum is that, on account of its being adjacent to the duodenum and deforming it, I could not differentiate this irregularity from the niche of an ulcer.

In diverticula of the duodenum, in two of the cases that were shown, we found associated diverticulosis of the colon, of the sigmoid, particularly. That seemed to indicate to me that probably we had a similar condition in the duodenum; we thought we had, perhaps, a diverticulosis throughout the intestinal tract, finding it in the sigmoid and again in the duodenum.

AGRANULOCYTIC ANGINA WITH REPORT OF CASE.*

By A. L. TYNES, M. D., Staunton, Va.

Agranulocytic angina is the somewhat formidable term used to describe a sore throat associated with certain blood changes and was first recognized in Germany in 1922 by

*Read at the fifty-ninth annual meeting of the Medical Society of Virginia, in Danville, October 16-18, 1928.

Schultz, Bantz, Leon and others. Swift to identify it, Beatrice R. Lovett,[1] of Chicago, reported the first case in this country. While the later case reports of this disease show some dissimilarity from the earlier reports, particularly as to age and sex distribution, the description of the main characteristics of the disease as now reported remains essentially the same.

There is the preponderance among women, the age incidence and the sore throat, with leukopenia due to the disappearance from the blood of almost all of the white cells belonging to the granular or myelogenic series, accompanied with a relative increase in the number of lymphocyte cells,—in other words, a neutrophile leukopenia and a relative lymphocytosis.

As pointed out by Schenk and Peper,[2] while most of the cases reported have had total leukocyte counts below normal—some as low as 900 per cubic m. m.—in a few cases the total count has been normal, or even above normal, during at least a part of the illness, but always showing a relative lymphocytosis and a neutrophile leukopenia. Thus, one of Zadek's cases had a total of 17,100 of which 86 per cent were lymphocytes. This case was perhaps a case of infectious mononucleosis and recovered, whereas, in the earlier cases reported with characteristic leukopenia, all died.

Etiology

The pathogenesis of this interesting disease is still unknown, but the consensus of opinion seems to be that it is not a definite disease entity.

Zikowsky[3] believes that it is a "severe form of sepsis occurring in a weakened organism, resulting in injury to the leukopoietic system as such and in paralysis of the organ complex (liver, spleen and endocrine glands), the secretions of which stimulate the bone marrow and regulate the entrance of the granular cells into the blood stream".

Friedmann[4] thinks that the disease is not due to an infection at all, but that it originates in an "endogenous disturbance probably of endocrine origin".

Skiles[5] seems of the opinion that the condition is brought about by one of two factors: "A specific infection resulting in local necrosis with the formation of a specific toxin for the bone marrow, or else as a primary affection of the bone marrow resulting in an inhibition of the granulocytic formation, due to lowering of the resistance of the patient".

The laboratory findings have not been constant and have thrown but little light on the etiology of the disease.

Cultures from the oral cavity show a variety of organisms such as Vincent's spirochaetes, B. Pyocyaneus, Pneumococci and Klebs-Loeffler.

Blood cultures have usually been sterile, but in some cases streptococcus, staphylococcus, B. Pyocyaneus and B Coli have been found.

Symptomatology

Agranulocytic angina is said to occur chiefly in middle-aged women. Kastlin[6] reports 78 per cent in females and 22 per cent in males.

In his review of the symptoms in the series, Kastlin found them distributed as follows: Fever forty-three cases; sore throat thirty-two; dysphagia twenty-five; jaundice twenty-five; malaise fourteen; pains four; vomiting three; bleeding from mucous membrane two.

The mode of onset was acute, coming in a period of good health in twenty-eight, while in the remaining fifteen the acute manifestations developed after a protracted period of ill health, or following definite illness. The temperature range at the onset of recognizable symptoms was from 101 to 105 F. Exhaustion usually developed early, and coma often preceded death.

Regional adenopathy and enlargement of the liver and spleen were observed, but were not constant. The average duration of illness was four to eight days, while the extremes were two to forty-two days. There were three recoveries in this series of forty-three cases, a mortality of about 70 per cent. In the cases which recovered, the blood picture returned to normal.

The age of the females averaged forty-six and of the males twenty-nine; and the extremes of age were four and one-half years and seventy-four years. In this series twenty-seven presented negative past histories, while sixteen showed previous histories of such illnesses as oral infection, typhus, tuberculosis, syphilis, pneumonia, operations, rheumatism, etc.

Schultz[7] does not consider the tonsil as the portal of entry, but as only a point of localization of the disease. This is evidenced by the fact that in a case with recovery which he reports, the tonsil was not affected until late in the disease, and V. K. Hart[8] reports a case

in a patient who had had a previous tonsillectomy.

Pathology

In Kastlin's forty-three cases the mouth always showed an inflammatory process. Ulceration and necrosis were most frequent, including the tonsils, throat, gums, and extending into the larynx and esophagus. Extra oral ulcerations were found in the gastro-intestinal tract, cervix, symphysis and conjunctiva. Cutaneous and petechial hemorrhages were found at autopsy.

There was frequently enlargement of the cervical lymph nodes, and in a few cases, enlargement of the liver and spleen.

Leukopenia with a relative lymphocytosis is always seen at some stage of the disease. The decrease of polymorphonuclear cells, as has been said, is both relative and actual, and they may disappear entirely. There is a decrease in the number of granular cells in the bone marrow which is of significance in accounting for the pathogenesis of the disease.

This was demonstrated to be true in the living body in three cases by Zadek, Schultz and Jacobowitz, who examined the bone marrow which they took from the sternum during the height of the disease.

Friedmann,[9] in reporting his series of twenty-nine cases, states there was pronounced leukopenia in all of his cases; while granulocytes were not always entirely absent they were greatly reduced in numbers. The absolute number of erythrocytes was very much reduced in most of his cases; in a few cases however, they were either normal or slightly increased. The number of blood platelets was normal or increased in all cases.

In his fourteen necropsies, he found erythroblasts and megakaryocytes were present in normal numbers and myelocytes were not entirely lacking; and in one case he found granulocytes in the bone marrow on puncturing the sternum immediately after death.

Aubertin and Levy,[10] after reporting their own cases and reviewing fourteen other cases in the literature, conclude that there is always "an alteration in the bone marrow characterized essentially by the disappearance of the granular white cells", and that the syndrome which he enumerates "is the expression of a generalized lesion of the granulocytic apparatus".

After a careful analysis of his series of forty-three cases, Kastlin, as do subsequent observers, concludes that, with the evidence at hand, agranulocytic angina cannot be considered a definite and distinct clinical entity.

Diagnosis

This rests mainly upon the blood findings which show a marked reduction of or absence of polymorphonuclear cells, and a relative increase of the lymphocytes. Certain poisons, such as arsenic, benzol, and thorium, produce a leukopenia, and benzol attacks primarily the granulocytic cells. Acute leukemia may show a similar onset, and indeed it may be impossible to distinguish it from agranulocytic angina, but usually the blood picture will enable one to make the diagnosis.

Cases of sepsis have presented syndromes which were practically impossible to distinguish from this disease until they came to autopsy. In fact, Gamma[11] regards all the syndromes causing disappearance of granulocytes from the blood, as well as monocytic tonsillitis, as forms of sepsis.

Treatment

The treatment of agranulocytic angina, while hopeless in the early history of the disease, is now less discouraging. Local and systemic medication so far as reported seem futile, but Hoch[12] reports a recovery in a patient with a leukocyte count of only 1,200 following a transfusion of 500 c.c. of blood. Transfusions in all of the other cases I have seen reported, however, were unavailing. Friedmann[13] in his series of twenty-nine cases reports four recoveries following Roentgen raying of the long bones, a rational procedure in the light of our present view regarding the pathogenesis of the disease.

In reporting the one and only case I have see I do so with many misgivings; first, because I did not recognize the nature of the disease until six hours before the patient died; and because no necropsy was made which doubtless would have proved of great interest, especially in view of the almost sudden and unexpected death of the patient.

Mrs. B. A woman of culture and refinement. Age 51. Married. Has had two children, no abortions.

Family History.—Negative for tuberculosis, Bright's, cancer, and serious nervous or mental diseases.

Past History.—The patient was said to have had weak lungs in her early teens, and she

had a slight hemorrhage from her lungs about the time of the establishment of her menstrual period. She was always a slender girl and young woman and somewhat underweight until after her menopause, which occurred at forty-seven, and which was passed without incident; since that period she had enjoyed good health almost continuously except as about to be noted.

For the past two years she had recurring furuncles in her nose, and in the external auditory canal, and had perhaps a little more throat trouble than usual, and was advised time and again by her physicians to have her tonsils removed. She had frequent attacks of hoarseness and on this account had to give up her singing.

During two months before her last illness she spent most of her time nursing an invalid mother in the South, a ministration which made serious demands upon her strength. About two weeks before her last illness she had a slight irritability of the bladder and was given a prescription with instructions that if she was not relieved within a few days she was to report for a careful examination, which was not convenient for her to have made at the time. Two or three days thereafter she called over the phone and stated the symptoms had completely subsided and she felt perfectly well and would not report for further advice.

Present Illness.—On Sunday before her fatal illness the patient was seen at church and she remarked that she never felt better in her life. She retired Sunday night, December the eighteenth, in apparently good health. On Monday morning she awoke with a sore throat and consulted a specialist over the phone, who sent a gargle and asked her to report if she did not improve. Considerably improved, she spent much of the afternoon Monday shopping and felt quite comfortable on retiring. Shortly after midnight she was awakened with muscular pains, headache, and a very painfully sore throat. I saw her in the forenoon Tuesday and found her suffering with severe pain in her throat, with headache, and pains throughout all of the muscles and joints. Her temperature was 104½, pulse 120. The throat was markedly congested and the uvula slightly edematous, and she was slightly hoarse, a very common affection for her. There was no evidence of membrane whatsoever, but one was impressed with the fact that she had a very angry, painfully, sore throat; the tonsils being considerably swollen. A culture was sent to the laboratory of the King's Daughters' Hospital and the report was as follows: Pure culture of staphylococcus albus and the smear showed streptococcus, staphylococcus, pneumococcus and Vincent's.

The patient was given local applications of a 5 per cent solution of mercurochrome, and later irrigations of hot saline solutions were used. She was also given a capsule containing codein and aspirin for relief of pain. This was required several times during the first two days. I was very much surprised to find so small a dose of the anodyne relieved her pain.

On Wednesday morning she was more comfortable. Her temperature was 103 2/5, pulse 100 and of good quality. The appearance of her throat was but litle changed. There was some swelling of the glands at the angles of the jaws, but practically no tenderness. By Wednesday evening the patient was decidedly more comfortable and was asking to be up. On Thursday morning her temperature was 100 and her pulse was good. Her general condition in every way was satisfactory. On Thursday night she was seen about eight o'clock and I remained with her for half an hour. Her temperature was normal. Pulse practically normal. There was still fairly definite swelling of the cervical lymph nodes and the hoarseness persisted. There was at this time a very small gravish patch, scarcely noticeable, on the tonsils. The patient was in the best of spirits and spent much of the time discussing the holiday season and insisted that she must be permitted to be down stairs for Christmas dinner; in fact, she saw no reason why she might not be up on the following day. When last seen at eight-thirty, she was as bright and hopeful as one could possibly expect any patient to be, who apparently was recovering from a rather severe attack of tonsillitis and was insisting on being permitted to be up, and who was looking forward with the keenest delight to the Christmas season, only two or three days ahead.

Her condition was so satisfactory at eight-thirty Thursday night, it was not deemed necessary to see her so early on the following day as usual, and she was not seen again until noon Friday. Having had no communication from the sick room since the night before, the

announcement by the nurse at the door that the patient was worse and somewhat delirious was both unexpected and disappointing. Her mental condition had been perfectly normal, so far as I had known, up until this time. On entering the room I was inexpressibly shocked at the patient's condition. I cannot adequately describe the change that had come over her since leaving her the night before. Her expression was anxious, her breathing bad, her voice very hoarse, and there was a definite swelling of the neck, extending well over the front to the sternal notch. Her temperature at this time was normal. Her pulse was 100, but of a surprisingly good quality; the rhythm perfect, and the volume even at this time extraordinarily good. On examination of the mouth I found the following condition: The right tonsil was red and swollen with a dirty brownish exudate about the center extending on to the posterior pillar. The left tonsil showed a grayish ulceration over the lower pole, extending down into the epiglottic fossa and the upper portion of the membrane, extending toward the upper pole, was darker in color.

Later in the afternoon the swelling of the neck had increased with astounding rapidity and extended down and involved the upper portion of the chest. It was edematous, and in appearance and on palpation, somewhat suggested an emphysematous condition, but of course such was not the case Within two hours more there was a rapid development of tiny ulcers on the sides and under the tongue with marked swelling of the floor of the mouth, but there was little if any swelling of the tongue and no dribbling of saliva. The rapid development of the pathological condition was astonishing to each of the consultants.

While having had no personal experience with the disease, I was convinced at this time the patient was most likely suffering from agranulocytic angina and that I had not recognized it before. I at once communicated with her husband and expressed my worst fears and asked for consultation. Her specialist was called at once and, the Professor of Clinical Microscopy of Columbia University, being in the city at the time, was also called, and not only saw the patient with us, but checked up the laboratory findings.

The consultants regarded the case as probably one of Ludwig's angina. This diagnosis was made, however, before the laboratory report was available, which was as follows: "Throat smear shows Vincent's angina, diptheroid bacillus, streptococcus, and staphylococcus". Blood count: "Hemoglobin 70 per cent; Erythrocytes 5,760,000; Leucocytes 350; P. M. N. 0 per cent; S. M. N. 99 per cent; L. M. N. 0 per cent; Myelocytes 1 per cent".

In the light of such findings the diagnosis of agranulocytic angina was immediately concurred in. The blood culture was negative after twenty-four hours, but later showed streptococcus in the broth and staphylococcus albus in the agar. By three p. m. the patient's condition had become extremely grave. Her heart, which all agreed at one o'clock was not even needing stimulation but which was begun at once, however, showed evidences of failing. At five she was cyanotic and had an attack of almost complete syncope, and at six-thirty she suffered a sudden collapse and ceased to breathe. Except for a slight delirium in the earlier part of the day, she was conscious up until her last moments.

References.

1. *J. A. M. A.*, November 8, 1924.
2. *J. A. M. Sci.*, March, 1926.
3. Abs. *J. A. M. A.*, September 22, 1928.
4. Abs. *J. A. M. A.*, March 3, 1928.
5. Ashworth and Maphis, Va. Medical Monthly. July, 1927.
6. *J. A. M. Sci.*, June, 1927.
7. *Deut. Med. Woch.*, July 15, 1927.
8. *The Laryngoscope*, May, 1927.
9. Abs. *J. A. M. A.*, September 8, 1928.
10. Abs. *J. A. M. A.*, August 11, 1928.
11. Abs. *J. A. M. A.*, December 18, 1926.
12. Abs. *J. A. M. A.*, May 26, 1928.
13. Abs. *J. A. M. A.*, March 3, 1928.

Professional Building.

Discussion.

Dr. Alex. F. Robertson, Jr., Staunton: Dr. Tynes has given us a most comprehensive survey of the literature and a very graphic report of a case of agranulocytic angina. Most of the cases from the literature seem to follow fairly consistently the original picture; that is, an acute, fatal affection occurring in middle-aged women, characterized by necrotic ulcerations of the throat and terminating in a picture which reminds us of septicemia. The etiology of the condition, as Dr. Tynes has said, is still in doubt. There is no specific organism which has been constantly isolated from the blood or from the internal organs. There are two theories as to the cause of the disease.

Whether the changes in the bone-marrow are due to a toxin elaborated by the throat infection, or whether the bone-marrow aplasia is the primary factor which lowers the resistance and allows the invading organism to become established in the throat, is undecided. Duke brings up a very interesting line of thought—that some of these cases of aplastic anemia affecting only the leukocytes are

chronic and that the throat condition is a terminal condition.

I should like to say a word about the X-ray treatment reported by Dr. Freeman. He reports four recoveries, I believe, by exposure of the long bones to the X-ray. I should like to know the rationale of that treatment. It would seem that in a disease in which fifty per cent of the cases die within the first eight days the exposure of the long bones to X-ray would have an incidental rather than a therapeutic value.

The case I saw was in a middle-aged woman who was taken ill, while on a train, with fever, chill, and backache. She came home and went to bed and was seen by me on the third day. She had a throat condition which immediately suggested Vincent's angina or diphtheria. A throat culture showed the presence of Vincent's organisms; and she was immediately given arsphenamin, but without effect. The next morning the culture was negative for diphtheria. We at once thought of streptococcus infection; however, a culture never showed this. Her blood count on the seventh day was: Hemoglobin 60; erythrocytes 4,256,000; leukocytes 600; P. M. N. 0; S. M. N. 50; L. M. N. 50; blood culture sterile. Another blood count was made on the ninth day of her illness, the day before her death, and showed: Hemoglobin 55; erythrocytes 3,596,000; leukocytes 450; no polymorphonuclears; no swelling of the regional lymph nodes. Death occurred on the tenth day.

Dr. R. L. Payne, Norfolk: It has been my misfortune to see three of these cases, and I should like to detail briefly the last one I saw. A doctor was taken sick with sore throat. I saw him on the ninth day after he was taken sick. On the third day his local attendants lanced his tonsils for quinsy and evacuated pus. He improved somewhat but after the sixth day got rapidly worse. On the ninth day he was brought down to Norfolk by automobile to see if we could do something for him. He was then unconscious, had rapid pulse, Cheyne-Stokes breathing, and was anuric. The only thing I could get out of the local doctor's blood count was that he had no white cells at all. A blood count was immediately asked for, after giving the history of this other blood count. In a short time the head pathologist came down and told me she had been able to find only three leukocytes, after searching two slides. His condition was desperate, and he died in about six hours. The diagnosis, of course, was agranulocytic angina. The thing that impressed me about the whole problem is the point stressed by the essayist, that this is not a clinical entity but some severe form of intoxication due to more than one type of organism. I say this because in this case we cultured the streptococcus viridans from both nose and throat.

In these acute, overwhelming intoxications the white blood center is entirely crowded out; there are no white cells in the blood; and patients go down hill very rapidly when the myelocytic center in the marrow is put out by the toxemia.

Dr. Tynes, closing the discussion: In closing, I want to call attention to just one or two points and also to stress the fact that this patient had what appeared to be a simple tonsillitis, such as we see almost daily, on Tuesday, Wednesday, and Thursday; apparently a tonsillitis that gave every evidence of running a typical, ordinary course of a somewhat severe character and getting well. In fact, when I left her Thursday night I had not the remotest idea that the patient was afflicted with a fatal disease, and there seemed really no especial necessity for my returning the next day.

In one case reported in the literature the characteristic throat picture developed within three hours.

I wish also to call attention to the rapidity with which leukopenia may be produced experimentally. Following intravenous injections of protein, leukopenia of a profound character may be found within ten minutes. (C. K. Drinker, Oxford Medicine, Vol. II, page 562.)

HUMAN INFECTION WITH BRUCELLA MELITENSIS, VARIETY ABORTUS.*

By WALTER B. MARTIN, M. D., Norfolk, Va.

Malta fever has prevailed in the Mediterranean basin for centuries. In 1859 Marston differentiated this disease clinically from typhoid fever and malaria. In 1886 Bruce[1] demonstrated the specific etiological agent in the spleen of patients dying of the disease, and later was able to recover the same organism from the blood of living patients. Having observed it only in the coccoid form, he gave to the organism the name micrococcus melitensis.

In 1897 Wright and Smith[2] demonstrated specific agglutinins against micrococcus melitensis in the serum of certain patients and applied agglutination methods to the diagnosis of the disease. In 1905-1907, a commission appointed by the British government made an extensive study of the disease in the island of Malta, and was able to show that a large percentage of the goats in that region were infected with the organism of the disease, and that the infection was transmitted to man through the ingestion of raw goat's milk. Following their report the incidence of infection among British soldiers was tremendously lowered by the simple expedient of boiling the milk used by the garrison.

Craig[3] in 1905 reported the first case of Malta fever known to have originated in this country, but the source of infection was not determined and it is uncertain whether the case was of the abortus or the melitensis variety. Other cases had been previously observed in this country, but these had either originated among laboratory workers or were individuals who had contracted the disease outside the Continental United States. In 1911 Ferenbaugh,[4] and later Gentray and Ferenbaugh,[5] reported a group of cases originating in the goat raising district of Southwest

*Owing to author's illness, this paper was read by title at the fifty-ninth annual meeting of the Medical Society of Virginia in Danville, October 16-18, 1928.

Texas. In 1922 Lake[6] reported a group of thirty-seven cases occurring over a period of a few months in Phoenix, Arizona. This outbreak followed almost immediately after one of the local dairies began to market raw goat's milk on a commercial scale.

In 1897 Bang described the organism responsible for epidemic abortion in cattle, which he termed Bacillus abortus. Since then the wide distribution of this disease among dairy herds in this country has been repeatedly noted. Schroeder and Cotton in 1911 found the Bacillus abortus in eight out of seventy-seven samples of milk tested, and in the milk of six out of thirty-one dairy herds examined. Following this there have been numerous reports on the percentage of infection in market milk and dairy herds from several parts of the country. In most instances the percentages of infection are much higher than those noted by Schroeder and Cotton.

In 1918 Alice Evans[8] demonstrated the close biological kinship between bacillus abortus of Bang and the micrococcus melitensis of Bruce. So close is this relationship that she concluded that they showed less differences than individual strains of the meningococcus. More recently the same investigator has reviewed the whole subject at length.[9] In a careful, detailed study of many cultures from human, caprine, bovine, porcine and equine sources, she was able to classify them in eight serological groups not distinguishable by simple agglutination tests. Following the suggestion of Meyer and Shaw,[10] she applied the name "Brucella" to this group of organisms. Bang's organism thus becomes Brucella melitensis, variety abortus, and the micrococcus melitensis is classified as Brucella melitensis, variety melitensis. For sake of brevity, they will hereafter be referred to as Brucella abortus and Brucella melitensis, respectively.

Only a comparatively short time elapsed after the publication of Evans' work before the first case of human infection with the organism of epidemic abortion was reported. In the fall of 1922 Keefer[11] observed a case with a clinical picture of Malta fever. An organism repeatedly recovered from the blood stream of this patient was shown to belong to the abortus variety of Brucella melitensis. Since Keefer's report in 1924, human infection with Brucella abortus has become of increasing clinical interest. During the past four years forty-six additional cases scattered over fourteen states have been reported. It seems probable that the disease is more prevalent than is even yet recognized, and that many cases of so-called atypical typhoid and other continued fevers of unknown origin, if investigated by cultural and serological methods, may be proven to be the abortus type of Malta fever. In this connection Hardy's[12] report on epidemiology of undulant fever in Iowa is of especial interest. From December 1, 1927, to June 30, 1928, 1,120 tests were performed for both typhoid and undulant fever. Out of this group there were forty-seven cases of typhoid or para-typhoid fever detected and seventy-four positive cases of undulant fever. These were distributed almost uniformly throughout the State of Iowa.

As might be expected from the similarity of the two organisms, the clinical manifestations of disease produced in the human body by invasion of Brucella melitensis, of either the melitensis or abortus variety, are nearly identical in kind if not in degree. A review of the rapidly increasing group of reported cases of human abortus infection gives one the impression that the disease is on the whole milder than true Malta fever. Kampmeier[13] has recently reported three cases each of the bovine and caprine varieties and concludes that the cases of bovine origin are less severe. Evans[14] reviews two cases of abortus infection, and is impressed with the greater virulence of the strains infecting swine. The true clinical picture of the disease must, however, be based on multiple case reports from various sources, and it is for this reason that the following case records are presented. The disease is probably more prevalent in rural districts than in cities on account of the more general use of raw milk in the country. I am convinced that, if the physicians of this state become familiar with the clinical picture of the disease, and if, when they encounter suspicious cases they have the proper serological investigation made, the number of positive reports will rapidly increase.

Case 1.—M. L., male, age 47. Since adult life patient had been a strong, healthy man. He experienced four attacks of acute rheumatic fever during the period from 6-20 years. In 1899 he had yellow fever, and as a young man he had several attacks of malaria. There was

nothing in his past history that might have any bearing on his present trouble.

On January 1, 1927, patient had two infected teeth in the right upper jaw extracted and the sockets curetted. The wound did not heal and several small spicules of bone were discharged from time to time. Throughout January and February he did not feel well, and was unusually exhausted at the end of a day's work. In looking back it seems not improbable that he was running a low-grade afternoon temperature for a considerable time prior to his first examination on March 20. In the early part of February he developed an acute pain in the region of the left hip joint. The pain was quite intense but cleared up in a few days. On the night of March 18th he had a chilly sensation followed by rise of temperature, and a slight temperature persisted throughout the following day.

He was first seen on the 20th, and was then complaining of malaise and general aching sensation. About midnight of the 20th he had a sharp chill with rise of temperature to 103. The following day he was admitted to the Norfolk Protestant Hospital. His temperature and pulse on admission were each 100. The patient did not appear especially ill, and his physical examination showed nothing of importance. There was a moderate amount of nasal discharge with a little tenderness over the right antrum about the site of the infected tooth socket. He had a slight cough but no abnormalities were noted in the lungs. Blood pressure was 100/70. The spleen was not palpable, and there was no demonstrable enlargement on percussion. There was moderate tenderness in the left lower quadrant of the abdomen and patient complained of some pain in this region. Blood count taken on the 20th showed 4,000 white cells, of which only 27.5 per cent were polymorphonuclears and 58 per cent small mononuclears. Malarial parasites were not found. Haemoglobin was 93 per cent and red cells 4,850,000. Urine had a specific gravity of 1,030, gave a slight reducing reaction, and was positive for diacetic acid. Blood sugar was taken immediately and showed 176 mg. per 100 c.c. A second determination the following day showed 121 mg. per 100 c.c., and there was no subsequent rise of the blood sugar above this level. The urine on one other occasion showed a trace of sugar.

On the 25th of March, the Widal showed an agglutination of 1:40 against para-typhoid B. This was rechecked on the 30th of March and on the 18th of April with the same results. There was no agglutination of typhoid or para-typhoid A. Icterus index was 6, and serum bilirubin 1.7 mg. per litre. Repeated blood cultures were negative after ten days. X-ray of the lungs showed no pathology.

Patient remained in the hospital twenty-four days. During this time the white blood count varied from 4,000 to 7,600, with polys from 27-51 per cent and small mononuclears from 66-39 per cent. Except for one rise to 103 following the initial chill, his temperature never went above 101 2/5. Its principal characteristic was the complete absence of any regular pattern. He had no further chills but on several occasions chilly sensations. These always occurred at night, usually around midnight. There were occasional mild sweats; restlessness, nervousness and depression were quite marked. On the whole the patient slept well; his appetite was poor, his bowels constipated, and during his stay in the hospital he lost 12-15 pounds in weight. He was discharged from the hospital without any satisfactory diagnosis having been made.

Throughout the next month he continued to run a low-grade temperature, going as high as 100. Depression became more marked, weakness and loss of weight continued, and insomnia was more troublesome. Subsequent blood counts showed very little variation. Haemoglobin remained high, on May 6th was 96 per cent, white blood count 6,200 with 29 per cent polys and 60 per cent small mononuclears. On this date blood was sent to the Hygienic Laboratory with request for agglutination against the melitensis group of organisms. Positive agglutination of 1:1280 against both Brucella melitensis and Brucella abortus was reported. Agglutination absorption test, also carried out at the Hygienic Laboratory, showed the infection to be of the abortus type. Repeated agglutination tests during the following year are interesting. On June 21st agglutination was still 1:1280; on August 15th it had fallen to 1:320, but rose to 1:640 on October 14th. On November 25th it was 1:320, on February 23, 1928, was 1:160, and on June 16th was still 1:80.

The patient had no further febrile reaction until the spring of 1928, when he had temperature for a few days associated apparently with

an acute bronchitis. This subsided quickly, but he continued to feel badly and suffered severely from insomnia. During the fall of 1927 he developed a numbness of the fourth and fifth fingers on the outer side of the left hand. This was not associated with any pain. There has continued to be a moderate discomfort about the left hip joint, and recently there has been an acute involvement of the right subacromial bursa.

Case 2.—E. R. A., male, age 31. This patient consulted me on May 31, 1926, on account of cough and general malaise. General health had always been good. Fifteen years before he had had an attack of acute appendicitis, but the appendix was not removed. There had been no other acute illnesses of consequence. His present trouble began four weeks before with what patient considered was a mild attack of influenza associated with sore throat. Since then there had been a persistent cough of spasmodic character productive of a small amount of sputum. He had lost some weight and strength had become greatly impaired; night sweats were frequent. These were slight at first but later became very heavy, and patient thought they were associated with a peculiar odor. During this time he had one severe attack of epigastric pain. On May 17th there was a chill lasting five minutes. Since then he had had one other chill and several times he had experienced chilly sensations of brief duration. These usually occurred at night. Recently he had had severe and persistent headache. There had been considerable general aching and soreness, but no localized joint symptoms.

His physical examination showed little of consequence. There were some questionable teeth and dental films later revealed two apical abscesses. His tonsils were definitely infected. His lungs were clear except for a few scattered coarse rales and expiratory wheezes. The blood pressure was 140/90, pulse 90, temperature 99 3/5. The spleen was not felt. There was no evidence of joint involvement. Blood examination showed haemoglobin 97 per cent, white blood count 4,200 with 44.5 per cent polymorphonuclears and 40 per cent small mononuclears. The Wassermann was negative. Urine had a specific gravity of 1,020, but gave no abnormal findings. There was no agglutination with typhoid or para-typhoid A and B. X-ray of the sinuses revealed a slight clouding of both ethmoids. There was no evidence of pathology in the lungs. Two weeks later the white blood count was 2,400 with 40 per cent polys and 46 per cent small mononuclears. This patient gradually recovered and a diagnosis was not made.

In June, 1927, he had a recurrence of similar symptoms though of a milder character. He consulted another physician Dr. W. B. Newcomb, and at this time agglutination tests in the Hygienic Laboratory were positive for melitensis 1:640 and abortus 1:640. Agglutination absorption test proved the infection to be of the abortus variety. This patient since has had no further recurrence.

Case 3.—Mrs. T. L., age 22. This patient was seen in consultation with her family physician on November 8, 1927. She had been ill at that time nearly three weeks. Past history and family history revealed nothing that had any bearing on her present illness. About five weeks after a normal labor she began to feel badly, and it was noted she had daily afternoon rises of temperature. There were no rigors, but occasional chilly sensations followed by sweats. After the first week of illness the temperature rose regularly each afternoon to 103-104; there was general malaise but practically no other symptom. Patient did not feel very badly and said she wanted to get up. Throughout her illness she continued to nurse her baby and the infant remained perfectly well.

There was nothing in the patient's physical findings that in any way explained her temperature. The urine had a specific gravity of 1,030 and trace of albumen, but no casts or pus cells. Haemoglobin was 75 per cent, white blood count 4,700 with 40 per cent polys and 51.5 per cent small mononuclears. A Widal had previously been done and reported negative. This was repeated with entirely negative findings against typhoid and para-typhoid A and B. On the same day agglutination tests against the melitensis group showed agglutination up to 1:1280 against Brucella melitensis and 1:640 against Brucella abortus. This finding was confirmed by the Hygienic Laboratory, and agglutination absorption test proved the infection to be of the abortus variety.

It was not possible to make complete clinical observation on the patient on account of home surroundings. She gradually recovered, however, on symptomatic treatment and has

remained perfectly well since. It is of interest to note that the baby nursed the mother throughout the illness and remained well. I was very anxious to check the agglutination reaction of the baby's serum but could not get permission to take a specimen of blood. Ruddock[15] reports a similar case, a young woman with a three and one-half months old baby. The baby suckled its mother during the first five weeks of the disease without ill effect.

Case 4.—This record is presented as an unproven case. The evidence is only suggestive. A woman 44 years old was seen in consultation on July 4, 1928. She was complaining of nervousness, insomnia and rather indefinite pains in her limbs, especially about her knees. She had been in this condition for several months. Insomnia was very distressing, and had not yielded to any of the numerous sedatives used.

General physical examination revealed no significant abnormality. Her blood pressure was rather low for a woman of her age. There was a moderate anaemia of the secondary type. The urine was negative; Wassermann was negative. Questioning elicited the fact that about eighteen months previously the patient had visited in Southern Texas in a section where goat raising was a thriving industry. While there she suffered an illness with a prolonged irregular febrile course. Her local physician made a diagnosis of malaria, but it is not known whether the plasmodium was found in the blood. She was given quinine without checking the course of the fever. Quinine was not pushed, however, on account of some intolerance to the drug. After a rather prolonged febrile course, patient finally recovered and returned home.

On account of this history, serum was checked against Brucella abortus and complete agglutination at 1:40 and partial at 1:80 was found. The control serum was not agglutinated. I, of course, recognize that the diagnosis is not established in this case, but the history of prolonged irregular fever, symptoms presented of nervousness, marked insomnia and joint pain, together with agglutination at 1:80, is highly suggestive.

A consideration of the principal clinical features of the cases just presented may be of interest. In this connection I have reviewed the records of thirty cases previously reported in the literature by Keefer,[11] Gage and Gregory,[16] Carpenter,[17] Huddleston,[18] Hull and Black,[19] Belyea,[20] Willlams,[21] Ruddock,[15] Kampmeier,[13] Giordiano and Sensenich,[22] Magath[23] and Kerns.[24] The onset of nearly every case has been insidious, and it has been practically impossible to say just when the patient first became ill. While chills are frequent in this disease, they rarely occur as an initial symptom. The history is usually one of gradually increasing malaise. The patient complains of undue fatigue, of slight progressive loss of weight, generalized aching, loss of appetite, and chilly sensations. This slow course may be interrupted by a sharp chill followed by general aggravation of symptoms. Actual rigor may be absent, but chilly sensations or "cold spells" are nearly always experienced. Chills or definite chilly sensations are recorded in twenty-four out of thirty cases. It is interesting to observe that the chills quite frequently occur at night. Sweats have been noted in the majority of cases. The sweats may be very severe, and have frequently been described as drenching in character. In three cases in the literature and one of my own, a peculiar odor was noted at the time of the sweat.

Loss of appetite is usual and with it goes progressive loss of weight, often of a marked degree. Joint symptoms have been found in twelve cases; in most instances the arthritic changes were rather mild and fleeting, but in a few cases the involvement was so marked as to suggest an acute rheumatic condition. Cough was present as an early symptom in eight cases, and at times there was an associated bronchitis of a severe degree. Headaches of variable intensity were noted in twelve instances. Nervous symptoms are a frequent accompaniment of the disease, and are manifested by depression, irritability, restlessness and insomnia. They constitute one of the most distressing aftermaths, insomnia especially being a troublesome symptom long after the acute febrile period has passed.

The temperature course practically always shows the typical undulant curve so characteristic of Malta fever. Unfortunately, this is of more interest in retrospection than of real aid in diagnosis at the bedside. The most suggestive feature of the temperature course is its complete irregularity from day to day. Physical examination yields little of value from the diagnostic standpoint. The size of

the spleen was recorded in twenty-four cases, and in eleven of these it was not enlarged. Even though it is found enlarged, that fact helps us little as most of the conditions from which this disease must be differentiated are also accompanied by splenic enlargement.

Contrary to some of the statements in the literature, the blood picture may be of great diagnostic aid. Heiser[25] does not mention the white blood count in his description of Malta fever. Castellani and Chalmers[26] state that the white count is normal but that there is a reduction in the polymorphonuclears with an increase in the mononuclears. Craig[3] in 1905 in reporting a group of cases of Malta fever in this country thought there was a mild leucocytosis, and that this disease could be differentiated from typhoid fever on the basis of the white blood count. Watkins and Lake[27] in thirty-three counts on twenty patients give figures ranging from 2,800 to 11,800. In only five instances, however, was a count higher than 8,000 reported. The mononuclears varied from 28-62 per cent; in twenty cases the mononuclear count was over 40 per cent. In twenty-four cases collected from the literature in which one or more blood counts were made, there was a variation between 2,200 and 32,000. Eighteen cases had counts of 7,000 or under, and in only three cases did the count exceed 9,000. In the one case with 32,000 leucocytes, a count of 4,800 was subsequently found. In fifteen of these cases differentials were reported and the mononuclears were above 40 per cent at some time in all but three cases. In my own three cases the lowest counts were 4,000, 2,400 and 4,700, respectively, with small mononuclear percentages of 58, 46, and 51.5. I believe that some of the higher counts may be explained on the basis of complicating infections, especially bronchitis. I am of the opinion that counts taken fairly early in uncomplicated cases will in most instances show a definite leukopenia and a relative lymphocytic increase. Conversely, a blood picture of this type should immediately suggest Malta fever as one of the conditions to be considered in the differential diagnosis.

Final proof of the disease rests upon either the recovery of the Brucella abortus from the blood stream, or the demonstration of specific agglutinins in the serum of the patient. Methods of carrying out both of these procedures have been so well described by Evans[9] that it seems unnecesssary to outline them here. Attention is directed, however, to the fact that different strains of the melitensis group give a marked cross agglutination, and that they can only be differentiated by the agglutination absorption reaction. Francis and Evans[28] have further shown that there is frequently cross agglutination between strains of melitensis and bacillus tularense.

Human infection with Brucella abortus is to be differentiated from practically all conditions associated with long continued fever. Especially are to be considered typhoid fever, including the para varieties, pulmonary tuberculosis, general miliary tuberculosis, malaria, subacute bacterial endocarditis, and chronic sepsis. The clinical features and the usual laboratory procedures necessary for the diagnosis of the various conditions mentioned are too well known to require repetition. When one considers the slow onset of abortus infection, the irregular chills and malaise, joint symptoms, cough, sweats, loss of weight, long continued fever, together with the quite frequent finding of an enlarged spleen, it is evident that it may more or less closely simulate at times any one of this group of diseases.

Conclusions

1. Human infection with Brucella melitensis, variety abortus, is a disease indistinguishable clinically and by ordinary laboratory methods from the true Malta fever.

2. Case reports in increasing numbers indicate its widespread distribution throughout the country.

3. Positive diagnosis, while suggested by its clinical course, can only be made on the basis of positive blood culture or specific agglutination response of the patient's serum.

Bibliography.

1. Bruce, D.: *Practitioner*, London, 1887, Vol. XXXIX, p. 161.
2. Wright, A. E., and Smith, F.: *Lancet*, 1897, Vol. I, p. 656.
3. Craig, Chas. F.: The Symptomatology and Diagnosis of Malta Fever with Report of Additional Cases. *International Clinics*, Vol. IV, p. 88.
4. Ferenbaugh, Thomas L.: Endemic Mediterranean Fever (Malta Fever), *Jour. A. M. A.*, Vol. 57, p. 730, August, 1911.
5. Gentry, E. R., and Ferenbaugh, T. L.: Endemic Malta (Mediterranean) Fever in Texas, *Jour. A. M. A.*, Vol. 57, p. 889, September, 1911.
6. Lake, G. C: Malta Fever in Southwestern United States, *U. S. Public Health Reports*, No. 801, 1922.

7. Schroeder, E. C., and Cotton, W. E.: The Bacillus of Infectious Abortion Found in Milk, 28th Am. Ref. Bureau of Animal Industry, U. S. Dept. Agriculture, 1911, p. 139.
8. Evans, Alice C.: Bacterium Abortus and Related Bacteria in Cow's Milk, *Jour. Infectious Diseases*, Vol. 22, p. 580 and Vol. 23, p. 354.
9. Evans, Alice C.: Studies on Brucella Melitensis, *Hygienic Laboratory Bulletin* No. 143, August, 1925.
10. Meyer, K. F., and Shaw, E. B.: A Comparison of the Morphological, Cultural, and Biochemical Characteristics of Brucella Abortus and Brucella Melitensis. Studies on the Genus Brucella. *Jour. Infectious Diseases*, Vol. 27, p. 173.
11. Keefer, C. S.: Report of a Case of Malta Fever Originating in Baltimore, Maryland. *Bulletin Johns Hopkins Hospital*, Vol. 35, p. 6, January, 1924.
12. Hardy, A. V.: The Epidemiology of Undulant (Malta) Fever in *Iowa Pub. Health Report*, Vol. 43, p. 38, September, 1928.
13. Kampmeier, R. H.: *Amer. Jour. Med. Sc.*, Vol. 176, p. 177.
14. Evans, Alice C.: Hogs as a Possible Source of Human Infection, *Hygienic Lb. Bul.*, Vol. 143, p. 57, September, 1925.
15. Ruddock, John C.: *Col. and Western Med.*, Vol. 27, No. 1, July, 1927.
16. Gage, E. E., and Gregory, D. A.: Human Infection with Brucella Melitensis, Variety Abortus. *Jour. A. M. A.*, Vol. 87, p. 848, September, 1926.
17. Carpenter, C. M., and Merriam, H. E.: Undulant Fever from Brucella Abortus. *Jour. A. M. A.*, Vol. 87, p. 1269, October, 1926.
18. Huddleston, I. Forrest: Is Bacterium Abortus Pathogenic for Human Beings? *Jour. A. M. A.*, Vol. 86, p. 943, March, 1926.
19. Hull, Thomas G., and Black, Luther A: Undulant Fever as a Public Health Problem. *Jour. A. M. A.*, Vol. 88, p. 468, February, 1927.
20. Belyea, G. N.: Brucella Abortus Infection in a Woman. *Jour. A. M. A.*, Vol. 88, p. 1482, May, 1927.
21. Williams, John P., and Shaw, Frederick W.: Malta Fever with Report of Cases. *Southern Med. and Surg.*, June, 1928.
22. Sensenich, R. L., and Giordiano, Alfred S.: Brucella Abortus Infection in Man. *Jour. A. M. A.*, Vol. 90, p. 1782, June, 1928.
23. Magath, Thomas B.: Undulant Fever. *Med. Clin. of N. Amer.*, May, 1928.
24. Kerns, Richard A: Clinical Aspect of Brucella Melitensis, Variety Abortus, Infection in Man. *Amer. Jour. Med. Sc.*, Vol. 174, p. 405, September, 1928.
25. Heiser, Victor G.: Malta Fever. *Oxford Med.*, Vol. 4, p. 799.
26. Castellani, A., and Chalmers, Albert J.: Undulant Fever. *Nelson Loose Leaf Med.*, Vol. II, p. 209.
27. Watkins, W. W., and Lake, G. C.: Malta Fever. *Jour. A. M. A.*, Vol. 89, p. 1581, November, 1927.
28. Francis, Edward, and Evans, Alice C.: *Public Health Reports*, Vol. 41, No. 26, p. 1273, June, 1926.

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FRACTURES AND THEIR TREATMENT.*

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In reviewing one's experiences during the past twenty-five years in the treatment of fractures, it impresses one with the great change which has taken place in our accuracy of diagnosis, efficiency of treatment, and our close attention to the ultimate results. At that time the X-ray was not in general use. Fractures would be tentatively reduced, immobilized over a considerable length of time, and it was not unexpected that joints adjacent to the fracture would suffer considerable limitation of movement, and a shortening of one and a half inches in the femur was regarded as an excellent result. Buck's extension, as we know now, imperfectly applied, was the usual treatment for fractures of the femur, with very occasionally the introduction of a wire or steel plate.

The war undoubtedly made more surgeons familiar with the treatment of fractures by suspension and proper traction, skeletal or otherwise, than anything else. It also impressed upon us the importance of minute attention to details, the importance of frequent checking up of the alignments of the bones by X-ray, and early mobilization of adjacent joints with the use of physiotherapy to hasten the return to functional activity.

The present industrial compensation law makes us more familiar with our late results by giving us the opportunity to estimate the percentage of permanent disability before a final settlement is made.

In spite of these advances, there are a great many surgeons who do not consider fractures important enough to give them their detailed attention. When one realizes that 60 per cent of the malpractice suits in this country are the results of fractures, it certainly indicates that this phase of surgery is not given proper study. Scudder, describing the work of the Fracture Committee of the American College of Surgeons, states that "it represents the organized effort of the medical profession to rectify the chaos existing in fracture treatment today". This Committee has since accomplished the introduction of a sixth requirement of all hospitals recognized by the College, namely, a minimum equipment to care for emergency treatment of fractures.

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We feel it is advisable, on every hospital staff, to have one man responsible for the treatment of fractures (charity patients) throughout the whole year. I have recently had the opportunity of visiting two city hospitals in cities of the Middle West. In one of these there was a rotating service in surgery. The results and treatment of the fractures which I saw were very unsatisfactory, the methods those in common use twenty years ago, and, on questioning the interne as to the use of skeletal traction, he replied he had never seen it used. In the other city, with one man in charge of fractures all the time, the results were eminently satisfactory and the methods of treatment were of the best.

The tendency of a great many men is to make a satisfactory reduction of a fracture, immobilize and lose interest,—forgetting the vastly more important steps that are necessary for an early return to functional activity.

In determining the treatment of any particular fracture, there are numerous things which must be taken into consideration. The age of the patient has considerable bearing, especially in the long bones of the lower extremities. Treatment of fractures in this locality in old age, adult life and childhood are vastly different. The amount of injury to the soft parts must be considered,—the liability of nerve injury, either from the original force producing the fracture or from subsequent compression of the nerve by callus. This latter is most frequently seen in the radial nerve in fractures of the shaft of the humerus, in the ulnar nerve in fractures of the elbow, and the anterior tibial nerve in fractures near the head of the fibula. The presence of arteriosclerosis, diabetes, anemia, syphilis and numerous other organic debilitating diseases would have considerable bearing on the prognosis and treatment of any particular fracture.

Fractures may be generally divided into three major classes: first, those which seldom or ever require open reduction, such as the clavical, metacarpals, metatarsals and phalanges; second, those which, in nearly all cases, require open reduction, as in fractures of the olecranon process and of the patella; third, the large class of cases in which one's best judgment must be exercised to determine whether the best results will follow open or closed reduction. Each case is a study in itself, and every surgeon who is treating many fractures is constantly shifting cases from the operative to the non-operative field and *vice versa*. I believe, with the modern methods of traction, there are now fewer fractures requiring open reduction than ever before, in spite of the fact that there is a greater tendency in some clinics to do primary open reduction.

The questions which must be considered in making a determination are: first, the length of time since the fracture occurred; second, the relative position of the fragments in regard to the main nerve and arterial trunks in that particular locality; and, third, the condition of the soft parts and which procedure most certainly will give an early return to functional activity, which is the ultimate goal. A layman, reaching a patient immediately after a simple fracture, may be able to make a more satisfactory reduction than a skilled surgeon is able to do a number of hours later. In fractures of the shaft of the humerus, the elbow joint and the head of the fibula, the position of the radial, ulnar and anterior tibial nerves must be considered with the relative positions of the fragments and whether or not a later excessive amount of callus may not cause compression with consequent paralysis of the parts supplied by these nerves. With considerable trauma of the soft parts and consequent lowered resistance to infection, open reduction should never be considered, nor should the position of the fragments of bones be ignored, as is so frequently the case. The applicaion of some form of traction can always be made, and immobilization obtained by this means in a modified Thomas splint will often produce good alignments and will enable one to treat an injury to the soft parts more satisfactorily. This is true, even if there is some evidence of injury to the blood supply of the extremity.

Many fractures that would first appear to be operative can frequently be reduced satisfactorily by gentle manipulation under the fluoroscope, and the bone held in apposition by properly applied external splints. It is especially true in the bones of the upper extremities. In fractures of the femur, I do not believe that one is justified in immediate open reduction, as alignment can be obtained and maintained, in a vast majority of cases, by skeletal traction, with the leg in a Thomas splint, an attachment for flexion of the knee and suspension from a Balkan frame. The weights by which suspension is maintained must be

exactly coordinated to produce the best results, with the least discomfort to the patient, allowing early mobilization of the knee.

In fractures of the femur Orr uses a rather ingenious way of procuring constant traction. The patient is put on the extension table, anaesthetised, and traction sufficient to bring about the proper alignment of fragments is applied. Moleskin plaster is then applied from a point above the fracture to below the knee. Tape or rope is attached to the lower end of the plaster, a double spica is applied just below the knee, and the ends of the moleskin plaster are turned upward and embedded in the plaster cast. The cast is continued downward to include the leg and foot. When the traction force from the extension table is released there is very little danger of overlapping of the bony fragments, as the traction is maintained by the adhesive embedded in the plaster. Where open reduction is necessary, he uses the same procedure except that, instead of using moleskin plaster embedded in the cast, he uses ice tongs embedded in the condyles of the femur, and their position is maintained by the plaster cast. He reported results excellent.

Fractures of the long bones, if transverse, can often be reduced and locked; with proper external splints good union may be assured. In fractures of both bones of the forearm or leg, an effort should be made for proper reduction by manipulation under the fluoroscope. This can usually be accomplished. If not, fractures of the leg may be successfully reduced by applying Steinman's pin either through or above the os calcis, with suspension of the extremity and proper traction. The forearm more frequently requires open reduction. In compound fractures, without destruction of the soft tissues, if the case has been gotten early, it is very easy to enlarge the break in the skin and do an open reduction, locking the fragments in position. If apposition of the fragments is not obtained in the long bones in the first four or five days with properly applied skeletal traction and suspension, open reduction is necessary. It rests to a great extent upon the surgeon's experience as to whether he will use a bone plate and screw, intermedullary graft, steel screws, steel plate or wire. If the fracture is transverse and proper apposition can be obtained, no foreign substance need be left in the wound. Intermedullary bone graft is an excellent means of maintaining apposition, but there is danger of fracture of the graft. In certain oblique fractures the insertion of kangaroo tendon through holes drilled in the fragments maintains proper apposition. Others prefer wire, which should be removed in from three to six weeks. Plates properly applied in selected cases certainly give excellent results. Many surgeons, notably Sherman, of Pittsburgh, use these more frequently than any other means. They should be removed in from three to six weeks, and this can usually be done with local anaesthesia.

If, in the reduction of a fracture by traction, an effort is made to retain the fragments in apposition by constricting the injured extremity with a plaster cast, trouble will surely result. In the lower extremities constriction is usually applied above the knee and over the foot. If the fragments are in such a position that they tend to over-ride from muscular contraction, no plaster cast, properly applied, can prevent it.

What I wish to emphasize most particularly in this short review is the necessity of obtaining the proper position of the fragments as early as possible, either by gentle manipulation or skeletal traction, with the extremity properly suspended, the early mobilization of adjacent joints, and attention to minute details that would insure early return of functional activity, which is the ultimate goal. Traction in the majority of cases would be all that it necessary, but if reduction is not obtained in four or five days, do not wait longer before doing open reduction.

I have a few slides, taken from the fracture service at the Roanoke Hospital, which I will show you, illustrating the results from some of the methods enumerated in this paper.

1. This patient was injured June 20, 1928, by an automobile wreck. Was seen about three hours after the accident. As you see, he has an oblique fracture of the olecranon process of the ulna with forward dislocation of the elbow. Immediate open reduction was done and kangaroo tendon was used to hold the fragments in apposition. Good functional result.

2. This man stepped on a rock in getting out of the city patrol wagon. He fell, striking his left elbow, and produced this comminuted fracture of the lower extremity of the humerus, extending into the joint. Swell-

ing and injury to the soft parts was so extensive that no operative procedure was undertaken until two weeks after the injury, when open operation was done. The bones were found firmly held together and flexion was possible only to a right angle; the ulnar nerve was displaced from its normal position to in front of the internal condyle. At present he has flexion to a right angle and almost full extension. He is following his occupation on the police force.

3. This man, a bricklayer, had his elbow sticking out the window of a bus, when his elbow was struck by another bus passing in the opposite direction. This produced an extensive comminuted fracture of both bones in the middle of the forearm and a backward dislocation of the elbow joint. He was seen immediately after the accident, given an anaesthetic, and, under fluoroscopic vision, the fracture and dislocation were reduced by manipulation. At present, nearly three months after the injury, he is getting physiotherapy and apparently firm union is taking place, with good functional result.

4. This man was knocked from a truck by a street car, producing a crush fracture of the body of the third lumbar vertebra and an oblique fracture of the surgical neck of the femur. The upper fragment showed the usual displacement outward with external rotation. On account of the crush fracture of the lumbar spine, an effort was made at reduction on the traction table and a body cast applied, with the leg in abduction. Further X-ray showed the fragments in worse position than before. He was finally put up in a skeletal traction, with ice tongs, and a modified Thomas splint, with adjustment for flexion of the knee. He is at present carrying on his usual work. He had, at the last observation, between a quarter and a half inch lengthening.

5. This man was struck a glancing blow by an automobile, causing a fracture of the external tuberosity of the tibia, extending into the joint, and displacement upward of the fragment, which, in turn, displaced the femur inward. Under an anaesthetic the fragments were manipulated into position, as shown in the next plate. Perfect functional result. No evidence of lateral mobilization of the knee joint.

6. Occasionally a fractured patella is found in which it is unnecessary to operate. This slide shows a transverse fracture of the patella, with very little displacement, in a man sixty years of age. Immobilization for a limited time produced a perfect functional result.

7. An extensive comminuted fracture of the patella was produced by a sixteen foot fall. Immediate open reduction was done and a kangaroo tendon encircled the patella, bringing the fragments in as good apposition as could be expected. I undestand this man has good functional result.

8. This man had a comparatively short fall, producing an oblique fracture of the tibia, a fracture just below the head of the fibula and a longitudinal fracture of the lower extremity of the posterior surface of the tibia, extending into the joint. Reduction was attempted on the traction table and a plaster cast applied, but could not be maintained. I hesitated to use a Steinman's nail, due to the longitudinal fracture in the lower end of the tibia. Open reduction was done, and both kangaroo tendon and wire were used in holding the bones in apposition. The wire was removed, in my office, under local anaesthesia, six weeks after reduction. He is having physiotherapy used. He has a perfect anatomical result and I expect the functional result to be splendid.

9. This man was not seen until several days after the injury, when a plaster cast had been applied by another physician. As you see, there is a transverse fracture of the junction of the middle and lower thirds of the tibia and fibula with marked displacement forward of the lower fragments. Open reduction was done, and the fragments of the tibia were placed in apposition. No retention apparatus was used except a molded posterior plaster splint. Functional and anatomical results were perfect.

10. This man had a comminuted fracture of both bones of the leg from a motorcycle accident. Effort was made at reduction on the traction table and molded plaster was applied. Apposition was not obtained. St. Clair's skate was used without benefit. Finally, Steinman's nail was placed through the os calcis and reduction accomplished with firm bony union and good functional result.

11. This man was injured in an automobile wreck, which caused a compound fracture of both bones of the leg. The original wound was slightly enlarged, the bones put in apposition and a molded plaster splint applied.

Union and functional results were good, and he has now returned to his previous occupation of bootlegging.

12. This slide shows a comminuted fracture of the lower extremity of the femur and the characteristic displacement backward of the lower fragment in a man 65 years of age. Ordinary traction method was used but without benefit. At the time the fracture occurred, we were not as familiar with what could be accomplished with the skeletal traction as we are today. A Laine plate was applied, as shown in this slide, with splendid results. To the same fracture today we would apply skeletal traction with the calipers placed a little bit anterior to their usual location, and reduction can usually be accomplished.

DR. JAMES CRAIK.*

By MAJOR GENERAL M. W. IRELAND, M. C.,
Washington, D. C.
Surgeon General, United States Army.

I presume that I have been invited to speak here today because of my connection with the medical service of the Army, the same service which Dr. Craik adorned in the days of our country's infancy.

A quiet, home-loving, modest man, James Craik is known to us mainly for two things, his army service and his intimate friendship with Washington.

His army service extended intermittently, as did Washington's, over almost half a century, beginning with the expedition against the French and Indians in 1754. He was then a resident of the present Winchester, a frontier town, and when a regiment was formed he was made its surgeon. He was 24 years of age and Washington, a young man, two years his junior, was the major of the regiment, later its commander. These two first met at Fort Necessity, and the friendship then begun lasted until death did them part, forty-five years later. Craik attended the wounded at Great Meadows and returned home with the Regiment. A year later, again with Washington, he accompanied Braddock's expedition, and attended that proud and stubborn man after he had received his fatal wound.

For gallant and meritorious service in battle, the Virginia Assembly, in August, 1755, awarded him a gift of thirty pounds.

In 1755, Washington was given command of the whole Virginia forces on the frontier, with headquarters at Winchester. Craik was his chief surgeon until the capture of Fort Du Quesne in 1758. After that he purchased a plantation at Port Tobacco, Maryland, and built himself a mansion, to which he took as a bride, in 1760, Marianne Ewell, great aunt of General Ewell, of the Confederate Army. There he lived quietly and practiced medicine until English abuses and colonial unrest under them disturbed the even tenor of his life. As early as 1774 he began to take an active part in the movements which led to the Revolution. In April, 1777, Washington wrote to offer him his choice of two positions. Craik accepted that of Assistant Director General of the Hospital for the Middle Department. The main army was there and, as Dr. Shippen, the Director General, remained in Philadelphia, Craik was the chief medical officer actually with the army. He was with Washington in all his battles from that time on. He saw Mercer breathe his last at Princeton, dressed the wound of Lafayette, at Brandywine, and was in charge of the hospitals at Yorktown. He was sent by Washington to organize hospitals for the French when they landed at Newport, and did it satisfactorily, despite dearth of resources.

In October, 1780, Dr. Shippen resigned, having been the third Director General to be tried by court-martial, being the third to hold the office. He was acquitted, but the other two had been dismissed. The Hospital (i. e., the Medical Department) was again reorganized. Washington recommended either John Cochran or James Craik to succeed Shippen. John Cochran also recommended Craik, but Congress chose Cochran. Craik became Physician and Surgeon General, which was second in rank. Thereafter the medical bickerings ceased. Craik's position still kept him with the army in the field.

When the Conway Cabal was forming against Washington, Craik warned Washington of it and named some of the plotters.

At the end of the War, Craik returned to his home at Port Tobacco, but, at Washington's request, he soon removed to Alexandria, to be near his great and good friend, and there practiced his profession until war with France threatened in 1798. Washington was called to

*Address given October 14, 1928, on the occasion of the unveiling of a monument to Dr. James Craik, in the graveyard of the old Presbyterian Meeting House, in Alexandria, Va.

command the Army which Congress had authorized, and he made it a condition that he name his principal assistants. For head of the Medical Department, he wrote, "I should prefer my old friend, Dr. Craik, who from forty years' experience is better qualified than a dozen of them together." Craik was commissioned Physician General, but before the army could be organized, the dispute was settled and the military establishment dissolved. Craik was not mustered out until June, 1800, although he had earlier retired to Virginia. There, in 1799, he was summoned to Washington's bedside, in what proved the latter's final illness. Much has been written in criticism of the treatment of Washington. We must temper our criticisms in view of the knowledge of the day. If we are to be blamed for not being in advance of our times, we shall all suffer. Washington was treated in accordance with the knowledge of his day. Bleeding was used for a vast number of diseases for almost a full half century after this. The teaching of America's leading medical man, Benjamin Rush, which influenced thousands, was powerful in its favor. Co-temporary criticism would perhaps have been greater had Washington not been bled at all.

Craik's grief for his loss, the loss of a great and dear friend, was profund and touching. "It seemed as if the bonds of my nature were rent asunder, and that the pillars of my country's happiness had fallen to the ground."

Dr. Craik survived his friend by fifteen years, "a stout, hale, cheery old man, perfectly erect, fond of good company and children, amusing himself with light work in his garden." He died at the age of 84.

It is interesting to recall that he was born in 1730 at a country place called Arbigland, near Dumfries, Scotland, and that the gardener on his father's place was one John Paul, to whom, when Craik was 17 years of age, was born that other John Paul who added Jones to his name and became one of the great figures in the Revolutionary cause in which Craik also labored. From there Craik went to Edinburgh to study medicine and get his degree. At the age of 20 he emigrated to the West Indies, and thence to America.

Few men have had or deserved a finer memorial than Craik has in the words which Washington wrote in his will, "My companion in arms, and old and intimate friend." No doubtful character was an intimate friend of Washington. When Washington Irving was seeking material for his life of Washington, he asked Lawrence Lewis to name some one who could supply material of an intimate nature. Mr. Lewis replied, "Dr. Craik was the only man, between whom and Washington there had always been unreserve and confidence." Let us leave him with the thought that he was a kindred spirit to the great and good Washington.

REPORT OF RECENT RESULTS IN RHINOPLASTY.*

By LEE COHEN, M. D., Baltimore, Md.

Our discussion this evening will not include consideration of those conditions wherein any loss of the soft parts of the external nose exists, such as is seen following gunshot and stab wounds, or after ulceration in syphilis, lupus and malignant growths. We shall instead confine our remarks to those deformities where the skin has remained intact, although in some instances scars induced by a previous injury causing the malformation may be present.

Such deformities are generally classified as congenital or acquired, but, in the opinion of the essayist, hard and fast lines cannot be drawn in this classification, since, for instance, many saddle noses of later life result from either septal abscesses or some injury during childhood which destroyed the centres of development and stunted future growth of the nose. Again, many of the over-sized noses in adult age unquestionably result from injuries in earlier life, no one of which was sufficiently severe as to cause fracture or septal abscess, but which by their repeated recurrence bring about hypertrophy of the bony or cartilaginous nose, or of both.

In several instances we have observed individuals who in childhood possessed a perfect nose, but which, from repeated blows received in baseball, basketball, boxing, etc., underwent such hypertrophic changes that by the time adult age was reached a grossly over-sized or hump nose had resulted.

Most so-called acquired deformities are in reality the result of injuries of such severity as to have caused at that time fracture and displacement of the nasal bones, with a resultant scoliotic or hump nose. At times, following

*Read at a staff meeting of the Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Va., October, 1928.

these severe injuries, more or less of the nasal bones is lost or destroyed, so producing a saddle nose, as will be seen in two of the cases to be shown tonight.

It is obvious that very little can be done in the prevention of those deformities actually of congenital origin, whereas much might be expected from prophylaxis in the acquired variety, if only fracture of the nasal bones were accorded the same immediate and painstaking care, when first seen, as is given to fractures of other bones of the body. It is a frequent experience of those engaged in this work to be informed by a patient seeking correction of a scoliotic nose—the result of a previous fracture—that the injury was at the time considered of little moment by his physician, who informed him that, "with the disappearance of swelling all would be well." It is to be hoped that the day is not far distant when all physicians will realize the fallacy of such advice, and, unless they themselves are capable of recognizing and managing these fractures—so often masked by the existing swelling,—immediately refer such patients to someone more experienced in this line of work.

The opinion frequently expressed, that it is best to await the disappearance of swelling of the soft parts before applying a permanent splint—recognized principle in management of fracture of long bones—is absolutely not in accordance with my experience in nose fractures. Much harm may be done by waiting, permitting the rapid formation of callus with more or less union in a faulty position, and necessitating subsequent refracture in order to obtain a satisfactory result. Immediate reduction of fracture, even when compound and requiring sutures for the skin wound, together with the application of a properly fitted and well-lined copper saddle splint, promises in every instance a perfectly straight nose. In an experience of many years this procedure has been routinely carried out, without a single untoward complication due to strangulation of tissue or to pressure induced by the splint.

Before attempting correction of any deformity of the external nose, rigid asepsis is of the utmost importance. This holds true also in the correction of recent fractures.

We first crop closely, with small barber scissors, all hairs within the nasal vestibule. The interior of nose should then be douched with at least a half gallon of sterile saline solution, and the vestibule cleansed with cotton swabs saturated with ether, the excess of which is carefully squeezed therefrom, to prevent discomfort from ether flowing over the nasal mucosa. Our next step is to pack the interior of the vestibule with cotton swabs saturated with alcohol, leaving them for about ten minutes. During this time the face should be well cleansed, first with soap and water, then with ether and alcohol. We discourage the use of iodine in the vestibule of the nose, because of skin irritation and discomfort which ha followed its use on several occasions. Since adopting this procedure of asepsis, not even a minor infection has occurred in our work.

Following asepsis, and next in importance, is anesthesia. Ether may be emloyed if desired in all cases. We find its use imperative, however, only in the successsful setting of recent fractures and when rib grafts are required to build up the nose in correction of depressed deformities. In fractures where tissue resistance is already reduced by trauma, and if the fracture is compound, bacteria frequently gain access to the tissue, so that further traumatization by needle puncture in injecting novocaine is more likely to be followed by severe infection. Likewise, in rib grafts, liability of infection of the implant is greater in tissue traumatized by the repeated needle punctures. Then there is, of course, the greater ease in removing a graft from the side of a narcotized patient rather than from one under local, who is conscious during the procedure.

In the correction of all other deformities in adults, local anesthesia is employed, supplemented by the hypodermic injection of morphine, gr. ¼, atropine sulp. gr. 1/150 and scopolamine gr. 1/200, just before injecting the novocaine but after the cleansing up process is completed. Also, before injecting a 2 per cent novocaine solution beneath the skin over the entire nose—the needle being introduced from within the nasal vestibule,—the sensitivity of the nasal mucosa is reduced by spraying with one dram of a 5 per cent alypin solution, a little at a time, in installments three minutes apart. Twenty minutes should be consumed for this spraying process. Likewise, before injecting novocaine, the nasal cavities proper are shut off from the vestibule by packing with sterile ½ inch nu-gauze tape, over the front of which is placed a thin layer of cotton saturated with alcohol. Thus we suppress nasal

breathing and reduce the likelihood of wound infection to a minimum. Further shutting off the field of operation by covering all parts of the face and head with towels, and the mouth by several thicknesses of gauze through which the patient may breathe—a principle employed in all surgical procedures—is the final step preliminary to the operation itself.

Since time will not permit a full exposition of the subject of corrective rhinoplasty, several cases from our records, with pictures before and after operation, have been selected for discussion.

It should be mentioned, however, that many cases coming for plastic operation also suffer from nasal obstruction, and these conditions should always be remedied before proceeding with correction of the external deformity.

Case 1.—Before and after operation.

In order that many of the operative steps later referred to may be thoroughly understood, I should like, before taking up the various cases, to hurriedly show a few slides bearing upon the technique, although some of these have been before shown.

Case 1. L. M., female, age 22. In addition to the external deformity, complained of difficult nasal breathing due to septal deflection and hypertrophied lower turbinates. On October 24, 1926, a modified submucous resection was performed, both lower turbinates compressed, and their posterior pendulous ends removed with a snare. In previous reports I have detailed what is meant by "modified" submucous resection. It might again be mentioned that, in the modified submucous operation, the greater part of the triangular cartilage is preserved, in order to furnish the firm support absolutely essential in elevating the tip and shortening the nose, when subsequent correction of the external deformity takes place.

Six months later this patient returned for the plastic operation, although it could have been done one month after the inside work had it suited her convenience. Under local anesthesia, through incision within each vestibule along the edge of the pyriform opening, the entire skin over the bony nose was undermined. With a rasp, irregularities on the right side of the nose and the hump on the bony dorsum were removed, care being taken to so round the summit that the nose would not later appear broad and flat. A V-shaped section with apex at the anterior nasal spine and base 5 mm. in width beneath the nasal dorsum, just above the tip, was then removed from the subseptum and lower edge of the cartilaginous septum. The defect so created in the subseptum was then sewed with three black silk sutures through the skin and mucous membrane on each side of the septum, thus elevating the tip and shortening the nose. It was then seen that a slight depression of the dorsum had resulted at the junction of the bony and cartilaginous

portions. This depression was filled in by turning over the dorsum nasi, beneath the skin, two small triangular flaps, one from each side, cut from the edges of wounds in the alae which overlap when the tip is sutured upward. These flaps were left attached at their bases, adjoining the septum, and superimposed one upon the other. Unless such depression results, these small triangular portions of the alae are always exsected, so that the edges of the alae wounds nicely co-apt. By removal of these flaps the wings of the nose are shortened in proportion to the elevation of the tip. No sutures other than those in the subseptum were employed.

In late years we have relied entirely upon slinging the tip of the nose upward with adhesive strips to reinforce superficial sutures in the subseptum, instead of using the through and through deep sutures formerly employed, and find this method quite satisfactory. Packing of the nasal vestibule with ½ inch iodoform gauze tape, and application of the copper saddle splint, completed the operation.

This case is one of the simplest types of deformity which comes to us for correction. The packing was entirely removed at the end of the first week, but the splint was worn four weeks, being removed every three or four days for the purpose of bathing the skin with alcohol, to prevent irritation and formation of pimples.

Case 2. S B. Female, age 20, with grossly over-sized hump nose. Operation under local December 27 1927. Incisions and undermining of skin as in former case. The nasal bones were severed from their attachment to the nasal processes below, with the saw, and their attachment to the frontal bone above infracted. With a rasp, at least 5 mm. of the upper edge of each nasal process was removed, so that when the lower edges of the nasal bones were forced down in contact with the nasal processes, the plane of the dorsum and height of the bony nose was lowered 5 mm. Now, to shorten the nose, a V-shaped section, with base 6 mm. wide at the dorsum and its apex at the anterior nasal spine, was removed from the subseptum. To further mobilize the bridge of the nose, and at the same time lower the plane of the cartilaginous dorsum, a triangular strip was removed from the entire septum just beneath the nasal dorsum. This was accomplished with the Struychen scissors, after undermining the mucous membrane on each side of the septum from the subseptal wound up to the frontal notch. The base of this triangular strip of septum was 6 mm. wide and located below, at the subseptal wound. Suturing of the subseptal wound elevated the tip and shortened the nose. Then, by removal of the overlapping edges of the wound in each ala, the wings of the nose were shortened in proportion.

Case 2.—Before and after operation.

Five months later a bit of callus developed on the bony dorsum and caused a slight hump. This was removed, under local, with a rasp, causing but slight inconvenience to the patient, with the result as shown in the photograph.

Case 3. R. S. Female, age 30. Over-sized hump nose. The tip drooped markedly and the columella protruded so far below the edges of the alae that the large nostrils were strikingly evident.

On March 1, 1928, under local, the irregularities and hump on the bony dorsum were removed with the rasp, the nose shortened and the tip elevated, by removal of a subseptal section 8 mm. wide at base, along with sections of corresponding size from each ala. The cartilaginous nose was now much too broad, but fearing that further excision might so impair the circulation as to bring about a subsequent sloughing of tissue, we concluded to make this correction at a subsequent sitting.

Case 3.—Before and after operation.

To suit convenience of the patient, the second operation was not performed until six months later—on September 11th. At this time the subseptum was transfixed with the straight double-edged pointed knife, incised from the anterior nasal spine just above and along the columella, curving upward beneath the tip to the cartilaginous septum. The nose being short enough, no segment of tissue was removed, but this incision so mobilized the tip that it could be placed on any desired plane. The incision also furnished access to the lower edge of the cartilaginous septum, from where we could conveniently reduce the height of the cartilaginous nose in the manner just described in Case 2, and place it on an even plane with the bony dorsum above.

There now remained but the undue width of the cartilaginous nose to be corrected, and this was accomplished by removing, with scissors, a 5 mm. strip from the cartilaginous dorsum, on each side of the septum, extending from the subseptal wound upward to the bony nose. Four sutures on each side were used to close the subseptal wound, the two upper ones, which passed through the cartilaginous septum above, furnishing a firm anchorage for the nasal tip. Packing of the vestibule in this case was exceedingly light, so that pressure made by a very snug fitting saddle splint might, by compression, hold the edges of the dorsal defects in apposition without sutures.

The splint was worn four weeks, while packing was removed at end of the first week, with the excellent result here shown.

Case 4. S. J. G., female, age 24. This case presents many points of interest. She was sent by a very able internist, from a neighboring city, on May 28, 1928, for the correction of a saddle nose caused by an automobile accident four years before. The doctor reported also that she had been a carrier of streptococcus viridens for ten months, following an attack of acute articular rheumatism which confined her to bed for three weeks, but from which she recovered without any cardiac complica-

tion. During this period repeated cultures from her nose and throat revealed the persistent presence of streptococci, but frequent blood cultures had failed to show any bacteremia. Leucocytosis of from 14,000 to 16,000 was shown in every blood count, and the patient ran a low grade temperature of from 99.5 to slightly above 100 each evening; also she complained of vague rheumatic pains about the body and extremities. She was depressed, wholly devoid of energy, and was able to carry on her work as a trained nurse only with the greatest effort. The laboratory findings were confirmed by Dr. Judd, of Baltimore.

We hesitated, of course, to do anything surgical until she was rid of the bacteria in her nose and throat. Treatment to accomplish this was begun immediately and consisted of douching the nose and throat twice daily at the office with sterile saline solution, followed by liberal spraying with hexyl-resorcinol in full strength. This was supplemented by use of toothbrush five times daily at home and freely gargling the throat, after each ingestion of food, with normal salt solution, followed by half strength hexyl-resorcinol. To improve her physical condition, she was directed to spend all possible time in the sunlight, to take extra milk and eggs, and to drink not less than ten glasses of water daily. In three weeks the patient, was not only fever free and subjectively greatly improved, but cultures from the nose and throat were free from streptococci. Local treatment was now discontinued and several days allowed before taking final cultures which were found negative.

We now felt that surgical measures could be safely instituted. Fourteen years before this, some sort of intranasal operation had been performed, and tonsils removed; seven years later, a submucous resection had been performed, without, however, bringing relief for her nasal obstruction. We found the upper and back part of the nasal septum so markedly deflected toward the right that it was in contact with the outer wall of the nose. A perforation of the cartilaginous septum about the size of a dime, high up and close to the voma, was also present. Externally, we had a typical saddle nose, with absence of the entire right nasal bone, while the edge of the left nasal bone could be sharply felt beneath the skin. History revealed that the right one had been removed when first aid treatment was rendered following the automobile accident.

Case 4.—Before and after operation.

On July 3, 1928, the septal deformity was corrected by submucous operation, but closure of the perforation was not possible owing to the thinness of the septum at that point; besides, being situated so far back and high up, we felt that with a straight septum scabs would not likely form on its edges, and the patient would not be inconvenienced by it. Time has shown this to be true. Healing was unevent-

ful after this inside operation, and the patient felt so well that ten days later we were able to proceed with correction of the external deformity by a rib graft operation.

Before correcting any saddle nose with rib transplant, we find it absolutely essential to have some accurate way of determining the size and shape of the implant to be inserted. It has been our custom to build up the depressed nose with dental wax placed on the dorsum until in size and shape it is in keeping with the facial symmetry. This wax impression is then sent to a dental laboratory, and from it is made a metal model which can be boiled with the instruments.

Case 5.—Before and after operation.

After preparing the nose for reception of the graft, the metal model is slipped under the skin, and we are thus given an accurate impression of what the result will be. Should the nose appear a trifle too high or low, the shape of the graft may be made to differ from the model accordingly, but generally the metal model offers an accurate guide for shaping our graft, and obviates the necessity of removing the implant to change its shape, once it is placed in position. This is important also because the likelihood of graft infection is increased in direct proportion to the amount of unnecessary handling to which it is subjected.

On July 13, 1928, under ether anesthesia, after undermining the skin over the nose in the usual way, the projecting upper edge of the left nasal bone was lowered with a rasp, so that the dorsum of the nose was of even height on both sides. Aftery trying the metal model under the skin, a mixed bone and cartilage graft was removed from the seventh rib of the right side and trimmed to the shape of model. The graft was then slipped under the skin of the dorsum, bony portion upward, so that its end would rest in contact with the frontal bone. Incisions within the nose were sutured with black silk, the vestibule packed with iodoform gauze, and a splint applied tightly enough to hold the implant snugly against the underlying bone.

To the use of this splint we attribute our satisfactory cosmetic results and the prevention of absorption of the bone grafts, since without the firm pressure exerted by it the bony surfaces cannot be kept in contact, nor can bony union be expected between the graft and the underlying nose. Without such bony union absorption of the graft is sure to occur. How results can be expected from the simple placing of adhesive strips over the nose, so commonly done, is beyond my comprehension.

It might be mentioned, as explained in previous papers, that the graft must not be touched with the fingers, gloved or ungloved, but should either be held with forceps or in sterile gauze, to avoid any likelihood of infection.

Packing was removed on the third day after operation, stitches from the side wound and

from within the nose at the end of a week. All wounds healed *per primum*, and the patient was able to leave the hospital on the eighth day. Splint was worn three weeks. Since the operation this young woman has been a changed person. She has had no recurrence of the bacteria in the throat, her body weight has increased, and with the joy of her improved appearance all signs of depression have vanished.

Case 5. W. P. Male, age 42, had been rather bad health since 1907, when he had sustained an injury from the explosion of a muzzle loading gun while shooting game. The breech bolt, 2 inches in length, struck the patient squarely in the nasal notch, practically destroying both nasal bones. This bolt passed through the right nasal chamber just beneath the glabella, entering the right orbit, from which it was subsequently extracted. The injury to the right eye necessitated enucleation, and, as you will observe from the photograph, when healing took place, the inner canthus was bound down to the bone a full centimeter below the level of that of the left side.

Aside from the external deformity, the patient complained of constant inability to breathe through the nose, frequent colds and acute tonsillitis, together with intolerable headaches. Inspection of interior of nose showed both nasal fossae practically blocked by a distorted and displaced septum, along with much callous formation, as a result of the injury to the bony septum. Viewed externally, there was practically no bony bridge to the nose. A crucial scar crossed directly in the nasal notch. The upper short arm extended over the glabella more than a half inch and the lower arm about 1½ inches in length, faded off the left side of the nose on to the cheek. This scar was intimately adherent to the underlying bone and offered great difficulty in undermining the skin at the time of operation. We have observed in many instances that scars which were quite evident before the plastic became contracted after undermining of the skin, and often were scarcely visible after healing took place. While the broad and dense scars may still be noticed, they also generally become so inconspicuous after undermining that excision of scars in these cases have in no instance been found necessary.

Our first problem was the establishment of free nasal breathing, and removal of diseased tonsils. This was accomplished on March 31, 1928. The septal deformity was corrected by submucous operation, and both lower turbinates were reduced by compression and snaring away the pendulous posterior ends. At the same sitting, but under ether, both tonsils were removed. During the following six weeks the patient's general health improved so greatly that on May 15, 1928, a rib graft operation was performed to correct the saddle nose.

You can readily see the improvement already achieved, and when a little later the displaced eye-lids are restored to their normal position by a plastic operation, his appearance should show further marked improvement.

1820 *Eutaw Place.*

STONEWALL JACKSON'S SURGEON.*

By CHARLES O. DEARMONT, M. D., White Post, Va.

On October 11, 1835, in the City of Winchester, Va., there was born a child who was destined, both through birth and training, to leave his impress upon the world. He was named Hunter Holmes McGuire, being the son of Dr. Hugh Holmes McGuire and Eliza Moss, of Fairfax County, Virginia. His veins were filled with Irish blood, his ancestors having come from the County of Fermanagh, Ireland,—and, while I am not sure, I would hazard the guess that he had some Scotch blood in him also.

Hunter McGuire was trained at the old Winchester Academy, where his father before him had first learned the three R's. Having completed his academic education, we find him enrolled in the Winchester Medical College, an institution composed of a few celebrated physicians of Winchester and Clarke County, his father being the founder and a professor in it. From there he went to Philadelphia, where his medical education was completed.

Returning to his native city, he was made, at the age of twenty-one, Professor of Anatomy in the Winchester Medical College, where he taught for two years. We next find him back in Philadelphia, associated with two eminent physicians, Drs. Pancoast and Luckett, conducting a Quiz Class. The fact that Drs. Pancoast and Luckett would have so young a man as their associate in teaching is enough to stamp Dr. McGuire as an outstanding figure in melicine; but the incident that is soon to

*President's Address read before the Medical Association of the Valley of Virginia, at Harrisonburg, Va., May 31, 1928.

follow is, in the opinion of the writer, the one that makes him stand out in bold relief.

About this time, or a little earlier, an old so-called "clock-fixer" had invaded our Southland and become active in Virginia, mending clocks (supposedly), and the result was . . . John Brown's Raid. I dare say nothing could have enraged the South more. You can imagine how the blood boiled in the veins of those Southern students in Philadelphia. Feeling was at its height, and I can imagine speeches, *pro* and *con*, were made by these students. In the midst of the turmoil we find young McGuire, and at the head of three hundred students, leading them Southward, never stopping until they landed in Capitol Square, Richmond. The Governor of Virginia made a speech, lauding Dr. McGuire for this feat. The students enrolled in the Medical College of Virginia, where they could give vent to their feelings, as well as prosecute their studies in a more favorable atmosphere. McGuire leaves them there, and goes to New Orleans to practice his profession, but fate did not permit him to remain there long. The fires are being kindled, the match is struck, and that shot at Fort Sumter has sent its echo around the world.

Winchester organizes its first volunteer company, and we find Dr. McGuire a private in the ranks. Was he to remain a private long? No longer than the eagle eye of Stonewall Jackson spied him. Jackson soon made him Medical Director of his army—over many older and more experienced heads. Dr. McGuire, recognizing this fact, protested to his general; to which Jackson replied, "Sir! I appointed *you*". This position he held with conspicuous merit until that fatal stroke at Chancellorsville, which staggered the Confederate cause. It was most befitting that Jackson should give his last command to his Medical Director. While his arm was being amputated, the wounded general said, "Dr. McGuire, do your duty".

No official report of battle by General Jackson fails to record some acknowledgment of Dr. McGuire's skill and service. He was not only Jackson's surgeon, but his trusted friend as well. His records prove the trust and confidence he had in him. Was the feeling mutual? Listen to these words, spoken at the unveiling of Jackson's monument in Lexington. "The noblest heritage I shall hand down to my children is the fact that Stonewall Jackson condescended to hold me, and treat me, as his friend."

After Jackson's death, Dr. McGuire was made Medical Director of the Second Army Corps, which position he held until the curtain was drawn at Appomattox. He developed remarkable administrative and executive ability, all of which is proven by the same expressions of approval by the commanders of the Second Army Corps. Dr. McGuire's genius was recognized by friend and foe alike. An authority from Boston says, "He humanized war by originating the custom of releasing all medical officers immediately they were captured". The credit also belongs to him for organizing the Reserve Hospital Corps of the Confederate Army, and perfecting the Ambulance Corps.

After the close of the war, Dr. McGuire settled in Richmond for the practice of his profession. He was soon elected to fill the Chair of Surgery in the Medical College of Virginia, which position he held until 1878. Realizing the necessity of a hospital to take care of the growing demands of his practice, he organized, in 1883, Saint Luke's Home for the Sick, with a training school for nurses. This continued to grow, until 1899, when he had to rebuild, what is now Saint Luke's Hospital.

Dr. McGuire's ability was recognized in peace as well as war, and honors came thick and fast. In 1870 he helped to found the Medical Society of Virginia, and was, for several years, chairman of the executive committee. In 1880 he was made its president. In 1869, he was made president of the Richmond Academy of Medicine; in 1875, president of Association of Medical Officers of the Army and Navy of the Confederate States. In 1876, he was vice-president of the International Medical Congress. In 1887, the University of North Carolinia conferred upon him the degree of Doctor of Laws. In 1888, the Jefferson Medical College of Philadelphia did likewise. In 1889, he was made president of the Southern Surgical and Gynecological Association. In 1893, he was made vice-president of the American Medical Association, and, in 1896, its president. In 1893, with his usual keen insight and broad vision, he saw the need for a more modern and better equipped medical school, and from this sprung the

University College of Medicine, he being its president up to the time of his death.

I have written much about Dr. McGuire, the Medical Director of the Army, the Administrator, the Executive; but there is another side to him—his sense of right. He had no patience with distorted facts. When Northern historians sought to becloud the minds of the children of those who wore the gray, it aroused all the fighting blood in him, and to him, more than any other man, belongs the credit of purging our schools of those histories, and securing in their stead books written by unbiased minds. He inaugurated the movement and was chairman of the committee.

Dr. McGuire's name was a household word throughout the South, and he never forgot his comrades. An old Confederate once told me this story; Dr. McGuire was once asked what he would charge to operate on an old soldier for a certain ailment. His reply was, "I haven't gotten low enough yet to charge an old Confederate soldier".

He was considered the third surgeon of the world, and was a pioneer in his field. All of us have read his treatise on gun shot wounds of the abdomen—a standard article in many works on surgery. While his contributions were not voluminous, he was a forceful writer, a clear thinker, and his words, few but well chosen, always carried conviction. As a teacher he had the gift of imparting knowledge. His diagnostic acumen was almost uncanny. As an operator he was most dexterous. He used to say, "Cut everything in front of you, and tie everything that spurts". How many of you who see the old "prostatic" remember that it was Hunter McGuire who first brought relief to him by doing the suprapubic cystostomy, and it may be of interest to you to know that, in conjunction with Sayre, of New York, he made and used the first plaster of Paris cast for Pott's disease of the spine:—Dr. Stuart McGuire wore the first one. He and Sayre were great friends. A strange coincidence—their deaths occurred but a few hours apart.

From my description of him, you may form the opinion that he was a stern, military figure, and, perhaps, in war, rightly; but in his ministrations to the sick he was as tender as a mother, and his kindness to the poor is best described by quoting his one-time bookkeeper, who said, "Often, in making out the bills, he would say, 'Don't send that bill. She is a poor woman.'" Once a *small* doctor in the Academy of Medicine criticized him for not charging a poor person enough. He replied, "Damn the Academy of Medicine. If a poor woman comes to me for relief, I am going to give it to her".

To say he was held in deep affection by his people, expresses it but feebly. When the silent reaper struck his first blow, every church, every creed in the City of Richmond offered up prayers for his recovery. And shortly after his death, which occurred September 19, 1900, a memorial association was formed, and voluntary contributions poured in to erect a suitable monument to his memory, so fast, and without solicitation, that within a year a statue was erected in Capitol Square, Richmond, close by the side of his beloved Jackson—a most suitable place.

THE INFLUENCE OF PHYSIOLOGIC RESEARCH ON MODERN SURGERY.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.
(From the Surgical Department of St. Elizabeth's Hospital).

It seems appropriate in the tercentennial of the publication of the classic monograph by William Harvey on the motion of the heart and blood in animals not only to review the advance made in physiology as a science but to emphasize the important influence of this advance on clinical medicine and surgery. It is not possible within the limits of an address even to mention the numerous instances by which the conceptions of disease and the methods of treatment have been directly or indirectly influenced by some research in physiology. Researches of this kind are not necessarily always in a laboratory on experimental animals. Careful clinical observations are sometimes capable of evolving new biologic principles. This has been notable in the life of the late Sir James MacKenzie, who, in the isolated Scotch village of Burnley, and with no training other than that of the average medical student of his day, solved many of the perplexing clinical problems concerning the heart, contributed greatly to a physiologic knowledge of the normal function of the heart, and made interesting observations on pain.

There is no work on pain that does not profoundly affect clinical medicine in all of its branches. Much remains to be known of the

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cause and distribution of pain in the sympathetics and in their connections. Observation of the very early stages of a disease and deductions made from cases accurately studied, doubtless will prove of value in determining the distribution and cause of pain in this disease.

Homer Swift says that all medicine is in a sense experimental. "By this it was meant to imply that it is necessary for the physician, whether in the laboratory or at the bedside, to approach his problem from the experimental viewpoint. Only by postulating that we know all about a disease or all about a sick man dare we conclude that we have the necessary knowledge which will enable us to control all the symptoms, that is, the phenomena of disease. No one would be so rash as to claim such knowledge. Why, then, should he be so bold as to approach either a sick man or the problem of disease in any attitude but that of the scientist?"

Disease, according to Professor C. A. L. Evans, is a departure from normal which threatens life or which in some way reduces its value. The symptoms of the disease are sometimes due to a cessation or an increase of function, or to an adaptation of a compensatory nature. These may be atrophy or hypertrophy of an organ, as a decrease or an increase of function. A study of this function often may be carried on clinically, but the fundamental basis in many instances now, as formerly, depends upon experimental research. William Harvey said, "At length, and by using greater and daily diligence, having frequent recourse to vivisections, employing a variety of animals for the purpose, and collating numerous observations, I thought that I had attained to the truth, that I should extricate myself and escape from this labyrinth and that I had discovered what I so much desired, both the motion and the use of the heart and arteries."

It is difficult to disassociate art and science in medicine or surgery. They blend into each other. The mechanical and technical procedures in surgery, the taking of a history and obtaining physical signs, may be called an art, but the proper interpretation of the condition of the tissues, the correlation of the history and the clinical findings secured by palpation, inspection or auscultation into a logical diagnosis and the application of this knowledge to the treatment of the case, involves a mixture of science and art that is too intimate to unravel.

The instances of clinical disasters that have occurred from ignoring physiologic function are unfortunately numerous. The days when the ovaries of women were removed for a slight pretext, such as dysmenorrhoea, menorrhagia or metrorrhagia, headaches, backaches and various groups of nervous symptoms, have passed. These operations often left in their trail nervous wrecks whose lives were more miserable after the operation than before, the remedy being far worse than the disease. In more modern times the excision of the colon to cure various troubles, from goiter to chronic cystic mastitis, has also had its vogue, but has happily been abandoned for such purposes. The repair of defects in the palate by turning in large flaps of tissue without considering the function of the muscles of the soft palate may result in a mechanical occlusion of the cleft, but the possibility of function of the muscles has too often been thereby destroyed. The setting of fractured bones with large metal plates tends to retard bony healing, because it is based chiefly on mechanical concepts, repairing bone as a carpenter would mend a piece of broken timber, without regard to the fact that foreign irritating substances in bone cause an osteoporosis. Frequently Nature's abundant efforts have prevented failure of union by throwing out a sufficient amount of callus in the bony tissue at a distance from the plate. Recently certain operations upon the sympathetic system have often afforded relief of pain, but undoubtedly many operative procedures in this field have been undertaken on too little physiologic basis.

The problem of the application of surgery to the gastro-intestinal tract is always a pressing one because such opportunities are abundant. No longer does the surgical treatment of every lesion of the stomach consist in doing a gastroenterostomy, though this operation has a distinct and wide field in properly selected cases. It remains to be seen whether the swing to the other extreme of extensive sub-total gastrectomies for even a small duodenal ulcer will prove satisfactory. Certainly the abolition of all acid gastric secretion for the cure of a comparatively small lesion cannot always be considered a desirable thing. Aside from its role in digestion, the antiseptic effect of hydro-

chloric acid is marked. While the gastric juice is not as important as it was formerly considered, it is probable that the deprivation of a large amount of healthy gastric tissue is not consistent with normal health in all patients. It would seem more logical to make the operation fit the pathology, rather than to adopt a standard method of procedure for every lesion. The failure to cure by gastroenterostomy when applied indiscriminately to all gastric lesions would doubtless also appear when all gastric lesions are subjected to a far more radical operation. That there are certain instances in which radical operation is indicated is, of course, obvious. It would seem preferable to perform a less extensive operation in mild cases, preserving as far as possible physiologic function, with the knowledge that a small percentage of these cases will have a recurrence of the ulcer, than to undertake the radical operation in the first instance in all cases. The radical operation can then be applied to the small percentage of recurrences.

It has been shown by Ivy and Farrell that the secretion of gastric juice is stimulated by some material circulating in the blood. In a female dog, Ivy transplanted a portion of the stomach to tissues beneath the mammary glands doing the operation in stages in order to develop a blood supply to the transplant. When the transplanted part of the stomach had been disconnected, it was found that feeding the dog normally would produce from the isolated pouch a certain amount of secretion of gastric juice containing hydrochloric acid and pepsin. Of course there are other stimulants for gastric juice besides this, but the determination of a humoral stimulant for the hydrochloric acid in the gastric juice is also interesting from a clinical view, as many diseases are accompanied or preceded by achlorhydria, and it seems that they may in some way destroy or neutralize this normal blood stimulant.

The absence of hydrochloric acid in the gastric juice for a long period of time is undoubtedly a potential handicap to health even though apparently there may be no symptoms. Donald R. Black has found that from 7 to 10 per cent of routine gastric analyses show achlorhydria. It has long been known that achlorhydria is present in pernicious anemia, and that it precedes the typical blood findings of this disease by months and sometimes by years. Such other diseases as anorexia, abdominal distention, diarrhea, urticaria, arthritis deformans, and myocarditis have been attributed to achlorhydria, and yet they are often found in patients whose gastric secretion is normal. The association of sclerosis of the spinal cord with achlorhydria has been particularly striking, as this disease has often been found to accompany pernicious anemia.

The absence of hydrochloric acid in the gastric juice permits the accumulation of bacteria in the upper intestinal tract. In cancer of the stomach the achlorhydria is a marked feature. In operations upon such cases the risk is distinctly greater because of the possibility of sepsis from the stomach, whose normal acid gastric secretion would have a marked antiseptic effect.

Following the suggestion of W. H. Higgins, attending physician to St. Elizabeth's Hospital, we give dilute hydrochloric acid in cases of cancer of the stomach before an operation. In order to insure a fairly constant supply of free hydrochloric acid in the stomach, six drams of the official dilute acid are given in three pints of water daily for two days prior to the operation. Small quantities of this solution are taken hourly, and not as usually prescribed after meals. In cases of pyloric obstruction frequent lavages with 0.5 per cent hydrochloric acid may be substituted. In conditions in which surgery of the upper intestinal tract may be anticipated for a few days, this procedure would tend to lower the bacteria in the intestinal contents and even after emergency operations on the upper intestinal tract it may be advisable to administer hydrochloric acid in this manner.

The majority of gastric symptoms are due to a derangement of the motor mechanism rather than of the secretory apparatus. Walter Hughson, of the Johns Hopkins Hospital, has shown that in dogs there is a tendency to pyloric spasm following an injury to the peritoneum. This is a reflex spasm and the paths for this reflex are are through the vagus nerve. After inducing the spasm and delayed emptying of the stomach by creating a lesion in the colon, he has caused normal emptying by resecting the vagus nerve, and finds that removing the branches of the vagus about the middle of the stomach where the vagus is more accessible has the same effect as when the nerve is severed immediately on entering the stomach. In some instances, particularly in connection

with other operations, this procedure has a field. That it permits a quicker emptying of the stomach and regurgitation of the alkaline contents of the duodenum to the gastric mucosa, so lowering or neutralizing gastric acidity, is shown by Olch and Elman. They say: "We next subjected normal animals to either gastroenterostomy, Polya-Balfour resection, or pyloroplasty or resection. The neutralization decreased emptying and quicker neutralization, and this is particularly the case following pyloroplasty or rsection. The neutralization in the gastroenterostomy was about the same as after vagotomy."

The influence of physiologic research on intestinal surgery has been notable. The studies of Cannon, Alvarez, Dragstedt and others on the movement of the intestines have been most helpful in surgical practice. Alvarez has shown that the usual intestinal peristalsis is largely myogenic and that the inherent wave of contraction in the musculature of the upper jejunum is about twenty per minute, whereas it is about eleven per minute in the lower ileum. The upper intestinal tract is not only more rapid and sensitive in contraction but is more easily affected by adverse influences.

According to Alvarez, stimulation may accelerate the rate of contraction of the lower ileum and so peristalsis can be reversed, as in the vomiting from acute appendicitis in which the irritation is confined to the region around the lower ileum; or, on the other hand, toxic influences that would overwhelm the upper small intestine may not so adversely affect the lower small intestine or the colon where the musculature seems to be more hardy. In this way, constitutional toxic causes may produce a marked impairment of motion in the upper small intestine, while not so profoundly affecting the lower small intestine, and so the same mechanical effect of reversed peristalsis will occur.

The great metabolic activity of the upper small intestine requires a large blood supply and much fluid. Obstruction in this region lessens absorption and causes pouring out through reversed peristalsis of the contents of the stomach and small intestines, and thus depletes not only the supply of water but of chlorides.

The surgical application of these physiologic facts is that in operations on the upper intestine an ample lumen must be provided because obstruction here is not only more keenly felt by the sensitive musculature, but because among other things rapid dehydration and loss of chlorides which follow it may be quickly fatal. It is also evident that with only a few bacteria in the intestinal contents of the upper small intestines, from the effect of the hydrochloric acid of the gastric juice, the lumen can be exposed more safely than in the lower small bowel and the colon where bacteria teem. The technical methods, then, must be altered to suit these conditions. The desideratum in the lower small intestine and the colon is to prevent contamination even if the lumen of the sutured bowel is not large. In the upper small intestine the indication is reversed.

The formation of calculi, particularly urinary calculi, has long excited interest. Osborne and Mendel about eleven years ago directed attention to the fact that often calculi appear in the urinary tract of rats used for nutrition studies, and that whenever such calculi were found it was where there had been an inadequate supply of vitamine A for some time. Fujimaki, of Tokyo, has more recently shown that rats fed with a diet deficient in vitamine A for a long time developed first bladder stones, then kidney stones, and finally stones in the bile ducts. The urinary stones are phosphatic, while the biliary stones are chiefly cholesterol. Deficiency in vitamine B apparently has nothing to do with the formation of stones, nor does the deficiency in protein in the diet seem to have this effect. After the stones have formed, as demonstrated by roentgenologic examination, they would in some instances disappear by altering the diet and including a large quantity of the fat soluble vitamines. Such treatment may in certains instances have a clinical bearing.

The study of the blood has been helpful in surgery, not only as regards diagnosis and prognosis, but in indicating the treatment. The aid of physiologic research in typing blood for transfusion and in indicating the desirability of using fresh whole blood is well known. The hemorrhagic diseases or anemias that seem to depend upon the excessive destruction of the red blood cells or of the platelets by the spleen are greatly benefited by splenectomy, whereas other anemias which are not dependent chiefly upon the spleen may be actually harmed by this operation.

While the physiologic function of the spleen is not fully known, the unique nature of its

blood supply in which the arterial system is independent of the venous, its active phagocytic cells, and its function as a filter, command our attention. W. L. Robinson, of Toronto, has written interestingly upon the filtering capacity of the spleen, and concludes that electrical conditions have much to do with the filtering. He says that the pores of the Berkefeld and Chamberlain filters vary between 3.8 and 4.5 u., which are abundantly large for the passage of most bacteria, but that filtration occurs by the process of "adsorption of bacteria to the walls of the filter pore". When the electrical charge of the bacteria or the small particles is opposite that of the walls of the pore, filtration occurs. The Berkefeld and Chamberlain filters carry negative charges, and consequently filter out positively charged bacteria or particles. According to Robinson, colloidal platinum and silver particles are negatively charged, whereas colloidal copper is positively charged. The spleen filters out the platinum and silver, but the copper passes through and no trace of it can be found in the splenic cells. The filtration by the spleen, then, appears to be largely of an electro-physical nature, and is selective for this reason and not because of the vitality of the cells. The bearing of this may be important in the administration of intravenous remedies, and possibly in the interpretation of the destruction of blood cells by the spleen in certain anemias.

The physiology of the blood serum has shown that there is a rather constant constituent of 0.1 to 0.2 per cent dextrose in the blood. This dextrose provides energy for the body and is the chief caloric source. The splendid work in Professor McLeod's laboratory by Banting and his colleagues has resulted in the explanation of the action of the internal pancreatic secretion and in the isolation of insulin, which promotes the utilization of dextrose by the body. These discoveries have opened a wide field for helpful remedies in both medicine and surgery. When the vital tide of the body is at a low ebb, as in shock, dextrose and Ringer's solution administered intravenously give the normal constituents of the salts in the serum plus dextrose, and the addition of insulin supplies an element which in the depressed vital state of the body the pancreas may not be able to produce in sufficient quantity to utilize the dextrose.

Andrews and Reuterskiold sum up the actual physiologic effect of insulin to be three-fold: "(1) it promotes the storage of glycogen in the liver; (2) it converts glucose into some other hexose more readily oxidizable; (3) it brings about an increased affinity of tissue for water, thereby causing a concentration of the blood." After observing patients to whom insulin and dextrose were given after operation, they conclude that, for post-operative acidosis and dehydrated conditions, water and glucose alone are needed and insulin may be contra-indicated. When administering the dextrose intravenously and continuously, however, it would seem that a small amount of insulin, not enough for all the dextrose in the injected fluid, would be helpful in making the remedy more efficient. The urine should be examind frequently and, whenever sugar appears, the amount of insulin administered should be increased.

One of the greatest advances in recent years in the general treatment of toxic conditions is the continuous intravenous injection of dextrose solution, first advocated by Matas, who has made so many valuable original contributions to surgery. A 5 per cent dextrose solution in Ringer's solution may be given intravenously continuously for days. The dextrose solution must be pure, otherwise, reactions may occur, and the same precautions must be taken to use freshly distilled water and a prepared tube as in other intravenous injections. We have given it three days in succession, having a buret so arranged that the flow can be accurately controlled. Usually an intravenous cannula is employed, but for a period of a few hours the intravenous hypodermic needle is often satisfactory. In cases of shock this method is of great value. If used in the early stages of approaching shock it is preventive, and is often a reliable remedy even after shock has been established. At any rate, it will serve to maintain the blood pressure until a blood transfusion can be done.

It must be recalled that the conditions in shock and in sepsis are different. The chief phenomenon of shock is the lowered blood pressure due to lack of fluid in the vascular system; consequently, fluid must be supplied quickly. The heart is not over-strained, but there is an insufficient amount of fluid upon which it must contract. In such instances, 500 c.c. or more of dextrose solution can be given

intravenously within a few minutes. As soon as the pulse picks up, the rate of flow should be diminished and maintained only at such a level as is necessary to keep up a sufficient blood pressure. If this requires an undue amount of the solution after a few hours, blood transfusion should be done. About 1,000 or 1,500 c.c. can thus be administered intravenously in cases of shock within the course of two hours without any detrimental effect. If this rate of flow is continued longer, it is dangerous and there is, of course, the possibility of edema of the lungs and of other complications which must be watched.

In sepsis or in dehydration, however, the intravenous administration of dextrose solution should be much slower. Usually an initial flow of 200 or 250 c.c. an hour is sufficient, and this should be gradually cut down to 100 or 150 c.c. an hour. We have found that a flow of less than 100 c.c. an hour, even with an intravenous cannula, and especially with a hypodermic needle, permits the cannula or needle to clog. After every 500 c.c. of 5 per cent intravenous solution, 10 units of insulin are injected into the rubber tube. The administration of insulin with dextrose solution in shock was described by Fisher and Snell, who, with Thalhimer, Ort, Irwin and others, advocated the use of dextrose with insulin in post-operative acidosis and toxemia.

Not only in toxic conditions and in shock, but in operations upon the stomach or intestinal tract where physiologic rest of these viscera for repair is indicated, nutrition can be maintained for many days by this method, and more effectively and with much less discomfort than by either hypodermoclysis or rectal administrations. In many affections of the liver the administration of intravenous glucose with insulin is excellent therapy, for the burden of storing the carbohydrates and giving them off is one of the chief hepatic functions. By this method some physiologic rest for the liver is secured. In operations upon patients with hepatitis, which Evarts Graham has shown practically always accompanies inflammation of the gall-bladder, the function of the liver may be greatly aided by the intravenous introduction of dextrose.

In intestinal obstruction of the upper intestinal tract there is, according to Haden and Orr, a marked decrease in blood chlorides and an increase in the blood urea, and the intravenous administration of sodium chloride is helpful. They recommend that sodium chloride be given, one gram per kilogram of body weight as the initial dose; then the chlorides in the blood should be watched to estimate subsequent doses. They first conceived that the beneficial action was due to the fact that the toxic material elaborated by the obstruction was neutralized by the sodium chloride. They have, however, abandoned this theory and the more recent explanation is that low blood chlorides in obstruction are at least partly due to the loss of chlorides from vomiting or from pouring out into the stomach or intestine large quantities of fluid containing chlorides which, on account of the pathologic condition, are not readily absorbed. Practically the same blood changes are found after a duodenal fistula in which there is loss of gastric juice and of pancreatic juice, and the intravenous injection of saline solution is helpful in such cases.

The physiology of the sympathetic system is not yet definitely ascertained. Doubtless many operations on the sympathetics have been based upon an illogical interpretation of unproved theories, but there is a field for the surgical treatment of certain diseases that seem dependent upon abnormalities of the function of the sympathetic system. The removal of the lower sympathetic lumbar ganglion in cases of megalocolon has proved in some instances beneficial. The extirpation of the colon in Hirschsprung's disease is not usually a satisfactory procedure. Operations on the cervical sympathetics in certain cases of angina have been satisfactory. The removal of the adventitia of large arteries for pain due to ischemia in the extremities is more uncertain, but in some cases seems to bring relief.

These few examples may give some conception of the debt that modern surgery owes to physiology. Physiology has also benefited by the careful study of clinical cases which always offers a fruitful field for research.

BIBLIOGRAPHY.

Swift, Homer F.: The Art and Science of Medicine. *Science*, 68:167-171, August 24, 1928.

Evans, Charles Arthur Lovatt: The Relation of Physiology to Other Sciences. *Science*, 68:259-264, September 21, 1928.

Ivy, A. C., and Farrell, J. I.: *Amer. Jour. Physiol.*, 74:3, 1925.

Black, Donald R.: Achlorhydria. *Sou. Med. Jour.*, 21:920-924, November, 1928.

Hughson, Walter: Reflex Spasm of the Pylorus and Its Relation to Diseases of the Digestive Organs. *Arch. Surg.*, 11:136-151, July, 1925.

Olch, I. Y., and Elman, Robert: Regurgitation of Duodenal Contents as Factor in Neutralization of Gastric Acidity. *Proc. Soc. Exper. Biol. & Med.*, 25:184-186, December, 1927.

Alvarez, Walter C.: The Mechanics of the Digestive Tract. 2nd ed., Paul B. Hoeber Co., New York, 1928.

Osborne, T. B., and Mendel, L. B.: The Incidence of Phosphatic Urinary Calculi in Rats Fed on Experimental Rations. *J. Am. Med. Asso.*, 69:32, July 7, 1927.

Fukimaki, Y. Formation of Urinary and Bile Duct Calculi in Animals Fed on Experimental Rations, Progress of the Science of Nutrition in Japan, League of Nations Health Organization, Geneva, 1926, p. 369. (From *Jour. Am. Med. Asso.*, editorial, 88:1080, April 2, 1927).

Robinson, William L.: Some Fundamental Characteristics of the Spleen and Their Relations to Function. *Ann. Surg.*, 88:333-334, September, 1928.

Andrews, Edmund, and Reuterskiold, Knute: Dangers in the Post-Operative Use of Insulin *Surg., Gynec. & Obst.*, 47:665-668, November, 1928

Fisher, D., and Snell, F.: The Insulin Treatment of Pre- and Post-Operative Non-Diabetic Acidosis. *J. Am. Med. Asso.*, 82:699, 1927.

Thalhimer, W.: Insulin Treatment of Post-Operative (Non-Diabetic) Acidosis. *J. Am. Med. Asso.*, 81:383-385, 1923

Ort, M: Treatment of Post-Operative Acidosis by Means of Insulin. *Arch. Franco-Belges de Chir.*, 27:994, 1924.

Irwin, E. L.: Insulin in Treatment of Undiabetic Acidosis. *New Orleans M. & S. Jour.*, 77:379, March, 1925.

Haden, R. L, and Orr, Thos. G.: Use of Sodium Chlorid in Treatment of Intestinal Obstruction. *J. Am. Med. Asso.*, 1924, 82:1515-1517.

TULAREMIA.*

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Dr. Edward Francis defines tularemia as an infectious disease caused by bacterium tularense. Primarily it occurs in nature as a fatal bacteremia of wild rodents, especially rabbits and hares. Secondarily, it is a disease of man transmitted from rodents to man by the bite of an infected blood-sucking tick or fly, or by contamination of his hands or his conjunctival sac with portions of the internal organs, or with the body fluids of infected rodents, flies or ticks.

Tularemia has been reported from all states in the union, except the New England States, Delaware, Wisconsin and Washington. Outside of the United States cases have been reported from Japan and three laboratory infections in England. This case is reported because of its incidence in this locality and because the hunting season, in which cases are more likely to be prevalent, is approaching.

Prior to 1924, but fourteen cases had been reported. Up to May 1, 1928, 613 cases had been tabulated by Dr. Francis.

The disease is found amongst ground squirrels, wild rabbits and hares, and wild rats. High susceptibility has been found in man, monkey, ground squirrels, rabbits, guinea pigs, mice, woodchucks, opossums, and young coyotes. Slight susceptibility in rats, cats, sheep and goats. Horses, cattle, hogs, dogs, pigeons and chickens have been found nonsusceptible. Domestic rabbits have never been found naturally infected.

Tularemia is transmitted to man by the bite of the horse fly, by the bite of the wood-tick, and by contamination of hands or conjunctival sacs with the infectious material from rabbits, flies or ticks. It has been found that wood-ticks transmit the infection through their eggs to the next generation of ticks, thus perpetuating the source of infection.

Contamination, or self-inoculation, has caused most of the human cases, principally from handling and preparing infected rabbits for cooking. The handling of infected animals in laboratories has been a fertile source of infections among laboratory workers, practically none escaping.

Bacterium tularense is destroyed by heating ten minutes to 58° C. However, a piece of infected rabbit cooked ten minutes, and nicely browned, but showing red muscle tissue near the bone was found to be infectious. The infection gains admission through breaks in the skin, through the conjunctivae, and it has been demonstrated that infection through the unbroken skin is possible.

In this section of the country the disease is most prevalent in the seasons when rabbits are hunted, for here rabbits are practically the only source of infection.

Pathologically, the infected lymph nodes in microscopic section are very like tuberculosis, and diagnosis is made by failure to demonstrate tubercle bacilli and positive serum findings of tularemia.

The incubation period of this disease varies from one day to nine days, average about three days. The onset is sudden with chills or chilliness, fever, sweating, headache, vomiting, aching, bodily pains and prostration.

There are four types of the disease:

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The ulcero-glandular, which is most common, is characterized by a definite break in skin as portal of entry, and enlargement and tenderness of regional lymph glands. The patient complains more of the soreness in the glands than of the sore, but the ulcer will be found to be not greatly inflamed, full of thick pus, and leaving a well defined hole when evacuated.

There may be subcutaneous nodules along the vessels between the ulcer and the adjacent glands. There is redness of the skin overlying the enlarged and tender glands, and this redness may extend to the original lesion. In about half the cases the glands suppurate and rupture. Whether they suppurate or not the glands remain enlarged for a long time—two or three months. The acute symptoms last for two or three weeks or more, with fever, sweats, recurring chills and prostration.

The oculo-glandular type is due to infection through the conjunctivae, and is characterized by early local irritation and edema and usually a papule on the conjunctiva of the lower lid. There is secondary swelling and pain in the neighboring lymph glands, about half of which go on to suppuration. The constitutional symptoms are the same as in the ulcero-glandular type.

The glandular type is the same as the ulcero-glandular, with no open lesion.

The typhoid type is characterized by fever as the only outstanding symptom.

In all cases the fever shows an initial rise of one to three days, a remission of one to three days, followed by a secondary rise, and then gradual decline to normal. Some cases show a maculo-papular or pustular eruption.

The white cell count is moderately increased. Convalescence is slow. After the acute symptoms have subsided there remains a general weakness, which may last for months. Recovery is the rule, but twenty-three deaths have been reported in six hundred and thirteen cases.

One attack confers immunity, which seems to be permanent.

The diagnosis depends principally on having the disease in mind. Cases have been orginally diagnosed "flu", typhoid fever and septic infection, but history of possible source of infection with examination of blood for agglutination will clear any doubt as to diagnosis. The agglutinins do not appear in the blood until the second week, with an abrupt rise in the titre in the third week, reaching its maximum in the fourth to seventh week, and falling in the eighth week, with a gradual decline thereafter for a year. The agglutinins persist in the blood in recovered cases, having been found after nineteen years.

Since there is cross agglutination of serum of tularemia with abortus and melitensis, a suspected tularemia serum should also be checked for these diseases unless they can be ruled out clinically.

The treatment is symptomatic. The enlarged glands should be left alone unless they suppurate Early incision into the glands has been followed by exacerbation of acute symptoms. When suppuration occurs, drainage is indicated.

Case Report

No. 18224. A deck-hand on a small boat, admitted to the U. S. Marine Hospital, Norfolk, Virginia, on July 13, 1928, gave the following history:

Family history negative.

Previous personal history: Measles and whooping cough in early childhood. Influenza in 1918. Tonsillectomy three years ago. No history of venereal infection.

Present illness: Patient states that he felt all right until July 1, 1928, when he contracted a rather severe "cold" and felt bad all over. On July 2nd, he hurt his left hand by striking a dried claw of a bear in palmar surface at base of ring finger. The wound was slight and gave him no trouble. On July 3rd, he killed, skinned and prepared for cooking a half-grown rabbit. Previous to this he had not touched a rabbit for three weeks. He dressed the rabbit on July 3rd, immediately after killing it, and noted nothing unusual about it. Others ate part of the rabbit, but no one else got sick. He still felt ill from his cold, but on July 6th he felt much worse, with headache, fever and chilly sensations in the evening. On July 7th, he had a doctor who told him his temperature was 103. On July 8th, he noticed that he had a swelling above and inside of the left elbow and left axilla. These swellings were not very painful. Wound in left palm had scabbed over and gave no trouble. Patient continued to have high fever with headache and general weakness, and on July 13th was admitted to hospital.

On admission, examination showed white

male, age 17, build slight, weight about 110 pounds. Patient apparently ill, having general appearance of early typhoid patient. Physical examination was negative with the following exceptions:

Blood pressure 140/80.

Spleen enlarged, easily palpable, and of firm consistency.

Small sore on palmar surface left hand at base of ring finger. Not much inflamed or very tender, but, on removal of crust, discharged a moderate amount of thick pus and left a punched-out ulcer. Left epitrochlear gland was large as a bantam's egg, moderately tender and not sharply defined in outline. Axillary glands in left axilla were as large as a lemon, slightly reddened, tender and not sharply defined. There was some limitation of motion at elbow, but practically none at shoulder on account of soreness. No other glands were enlarged.

Patient's urine was negative.

Wassermann negative.

Widal negative.

White blood count 14 300.

Blood culture negative.

Malaria smear negative.

On admission his fever was 102 at noon. His temperature was lowest at 8 A. M., and highest at 8 P. M. On July 20th his morning temperature was 101, his evening temperature 104. From that time it declined very slowly until August 9th, when he ceased to have any fever.

His pulse ranged from 80 to 120 at the height of his fever, but he had a tachycardia of 90 to 120 as late at August 31st. His spleen was palpable until about August 26th.

The wound on the hand healed rather promptly. The epitrochlear gland did not break down but subsided practically completely by September 1st. The axillary gland showed softening and was not opened until August 18th, when it was incised and packed. It drained freely and healed, but the gland was still palpable on September 4th.

On July 18th, the blood, tested by Dr. Edward Francis, of Hygienic Laboratory, was found to agglutinate bacterium tularense, 1 to 80; on July 27th, 1 to 1.280; and on September 4th, 1 to 640, confirming diagnosis of tularemia.

The rabbit blamed for this infection was killed eight miles south of the Virginia-Carolina line on the Dismal Swamp Canal.

THE INFLUENCE OF FORCED FLUID ADMINISTRATION ON THE COURSE OF MERCURY POISONING.

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Most patients suffering from poisoning following the oral administration of mercuric chloride are subjected to treatment only after the lapse of some little time. Burmeister and McNally[1] have shown how rapidly mercuric chloride is absorbed from the alimentary canal; consequently, in these clinical cases, account must be taken of the poison which has passed into the circulation, as well as of that which still remains unabsorbed when the patient comes under observation. A recognition of this fact, as well as the occasional occurrence of poisoning from the parenteral administration of some mercury preparation, has led to various suggestions, in the hope of rendering the absorbed mercury innocuous.

In reporting the recovery of a large proportion of the cases of mercury poisoning observed by them, Lambert and Patterson[4] stressed the importance of forced fluid administration, the object being to dilute the poison and hasten its elimination. Subsequently, however, Sansum[5] found that, after the intravenous injection of barely the fatal dose of mercuric chloride, it was impossible to save dogs by the administration of enormous amounts of fluid, amounts which must have effected great dilution of the blood and produced copious diuresis.

In the vast majority of instances of clinical poisoning by mercuric chloride, the salt has been taken orally; Sansum's results did not prove that fluid administration was valueless here. To obtain information regarding the influence of fluid administration after oral ingestion of mercuric chloride, experiments were carried out on dogs in this laboratory during 1922. The method of procedure was as follows: The animals were fasted twenty-four hours and were then given 20 mgm. of morphine sulphate per kilogram subcutaneously. In about thirty minutes, the mercuric chloride was administered, through a stomach tube, in the form of a 5 per cent solution in distilled water. From a considerable number of experiments, it was concluded[2] that a dose of 20 mgm. of mercuric chloride per kilogram,

administered to dogs in the manner described was "fatal in the great majority of cases unless some form of treatment is employed." With this assumption, the efficacy of fluid administration was tested by first giving the dogs 20 mgm. of mercuric chloride orally and then injecting large amounts of isotonic salt solution intravenously and intraperitoneally. Of twenty-five animals poisoned by the stated dose of mercuric chloride and treated by forced fluid administration, twenty (80 per cent) survived for at least one month. It was concluded, therefore, that the intravenous and intraperitoneal injection of large amounts of isotonic salt solution was of definite benefit in dogs poisoned by the oral administration of mercuric chloride.

Not infrequently, physiological salt solution is looked upon as an inert fluid; such an attitude was adopted in reporting our earlier results. Obviously, such a course is scarcely justified; the supposed favorable results obtained by administration of salt solution might be the result either of the fluid or of the contained sodium chloride. In the hope of shedding light on this aspect of the question, additional experiments were carried out, the results of which have shown that our earlier conclusion as to the favorable influence of forced fluid administration in dogs poisoned by mercuric chloride was erroneous. Isotonic and hypertonic solutions of sodium chloride, dextrose, and sodium sulphate alike proved of no apparent value in dogs that had received sufficiently large doses of mercuric chloride by mouth.

Since the completion of these later experiments by us, a paper by Hesse[3] has appeared. In this paper, Hesse states that he has found forced fluid administration of no value in animals poisoned by orally administered mercuric chloride, and explains our earlier mistake[2] by the statement that the dose of mercuric chloride which we assumed to be fatal in the great majority of the control animals was too small,—recovery frequently taking place after the oral administration of 20 mgm. of mercuric chloride per kilogram orally to dogs. Hesse employed a slightly different technic from that utilized by us. Disregarding our earlier experiments, we now have the records of thirty control dogs that received the dose of 20 mgm. of mercuric chloride per kilogram in the manner described in our earlier paper.[2] Of these thirty untreated animals, four survived as long as one month, and the remaining twenty-six succumbed, usually within a week following the mercury administration. Of eighty-eight control dogs given 25 mgm. of mercuric chloride per kilogram, eighty-five succumbed and three survived. With a reduction of the dose of mercuric chloride to 15 mgm. per kilogram, fourteen out of eighteen dogs succumbed within a period of one month. We cannot agree with Hesse, therefore, that the dose of 20 mgm. of mercuric chloride per kilogram is not sufficiently large to cause death in the great majority of dogs when the poison is given according to the method which we employed. The fact remains, however, that he is correct in saying that forced fluid administration is incapable of saving dogs poisoned by fatal doses of mercuric chloride. In our recent experiments, part of the dogs were fed an exclusive meat diet for some days prior to the mercury administration; others were fed exclusively on bread and milk, but the results were fully as poor in the treated dogs as in the untreated one, regardless of previous diet or of the solution employed in treatment. In the first experiments, where it appeared that saline injection was of benefit in dogs poisoned by mercuric chloride, the serious mistake was made of first determining the supposed fatal dose of poison and then testing the influence of treatment on animals that had been given this dose of mercuric chloride, without the precaution of simultaneously running controls. It is possible that an error was made in preparing the solution of mercuric chloride; the chance of seasonal variation in the resistance of the dogs to mercury poisoning must also be taken into account. Whatever the explanation may be, our later observations have convinced us that forced fluid administration, in the form of isotonic or hypertonic sodium chloride, dextrose, or sodium sulphate solutions injected intravenously and intraperitoneally, has not the least beneficial action in dogs poisoned by mercuric chloride. Contrary to what is true of certain other measures that have been proposed for the treatment of mercury poisoning, the use of isotonic saline solution appears to be a safe procedure, in so far as any intravenous injection may be considered safe. However, forcing fluid in the manner advocated by Lambert and Patterson[4] causes the patient some little discomfort, a factor that

may deserve consideration in view of the apparent valuelessness of the procedure.

BIBLIOGRAPHY.

1. Burmeister and McNally: Acute Mercury Poisoning. *J. Med. Res.*, XXXVI, p. 87; March, 1917.
2. Haskell, Carder, and Coffindaffer: The Value of Forcing Fluid in the Treatment of Mercuric Chloride Poisoning. *J. A. M. A.*, LXXXI, p. 448; August 11, 1923.
3. Hesse, Erich: Versuche zur Therapie der Quecksilbervergiftung. *Arch. f. exp. Path. und Pharmakol.*, CVII, p. 43; 1925.
4. Lambert and Patterson: Poisoning by Mercuric Chloride and Its Treatment. *Arch. Int. Med.*, XVI, p. 865; November, 1915.
5. Sansum, W. D.: The Principles of Treatment in Mercuric Chloride Poisoning. *J. A. M. A.*, LXX, p. 874; March 23, 1918.

MENTAL PROPHYLAXIS.

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The study of disease processes in general, with advancing knowledge in the difficulties in instituting remedial measures for end results, has more and more focussed attention upon prevention. Every acute infectious disease holds possibilities of sequelae whose end results are irremediable. Many of the more chronic disorders, once they have become full blown, are practically beyond the possibility of complete return to normality. Thus the realization has been thrust upon us that some means must be sought to reduce the incidence of organic disease processes and hence relieve the tremendous economic loss entailed therefrom. From a purely practical standpoint we are confronted with a large array of economic liabilities in such diseases as tuberculosis, carcinoma, syphilis, etc., not only in the impaired usefulness of the individual, often in the most productive period of his life, but also in the burden upon the treasury of the state in caring for those affected.

This trend towards prophylaxis is becoming more and more apparent in the field of nervous and mental disorders. There is no more disheartening outlook than attempt at rehabilitation of those so affected. So, here too we turn to preventive measures as holding the greatest possibilities for coping with the situation. The sum total of liabilities incurred by all types of mental diseases is staggering in its proportions, and there is a woeful lack of knowledge on the subject by the average individual not coming in direct contact with these problems. It is with the idea of attempting to impress the magnitude of the problem upon the average practitioner of medicine that this article has been undertaken.

The problem of the mentally incapacitated has a twofold economic aspect: criminology and the care of the otherwise maladjusted. We shall consider only the latter group and see what an array of facts may be elicited from this alone. There is probably not a man practicing medicine today who does not realize the importance of preventive measures aimed at tuberculosis and venereal diseases. But there are few who know that the total number of beds devoted to the care of the mentally sick exceeds the number devoted to all other types of disorders combined. In other words, even with the facilities which we have and which at present are inadequate to care for all who need attention, we are handling more individuals suffering from mental diseases than those needing attention for all other types of disorders. In 1925 there were 322,342 patients in hospitals for mental diseases in this country. Seventy-five thousand new patients are admitted annually. We spend approximately three hundred million dollars ($300 000,000) each year in caring for the mentally sick in our hospitals. In some states one-eighth of the total revenue is required for the upkeep of such hospitals. In other states the expenditures would be greater if the facilities for handling such patients were more nearly adequate. These figures do not take into consideration the economic loss through the incapacitating of the individual for productivity. Nor do they include the tremendous liabilities incurred by the state in the handling of those criminals whose maladjustment is the result of psychopathology.

Every citizen of this country is justly proud of our economic progress and stability. The growth of each of our cities is a matter of intimate interest. We may stand on "Main Street" and feel a thrill of enthusiasm as we watch the crowds pass by. But how different a picture to the mental eye it is when we consider that one in every twenty-five who goes by thus in the passing throng has been or will be mentally sick and a liability. We are justly proud of the public schools which are daily increasing in numbers, physical qualities, and efficiency and which are caring for greater and greater numbers, bringing education to all. It would be a stirring sight to have the 24,000,000 school children pass in parade before us.

But consider that in this crowd one million will be mentally sick at some time under our present system.

Of the 322,342 cases cared for in our hospitals, at least one-half could have been saved from this necessity through preventive measures. It would be difficult to exactly visualize the economic saving thus brought about. It does not require a very vivid imagination, however, to realize that preventive measures instituted in the early formative era of life over a comparatively brief period of time would cost the state considerably less than the total care of the individual later over a period of from twenty to thirty years. Add to this the saving of the individual productiveness and the balance in favor of prevention is still greater.

It is this problem which mental hygiene is attempting to cope with. Of course, the problem is humanitarian as well as economic. It is twofold in its scope: to deal with organic diseases as well as with environmental influences. Individual behaviour is the resultant of organic constitution reacting to external environment. Hence, all organic disease processes are factors in the equation. This necessitates a liaison with all other agencies devoted to preventive measures. As noted above, the normal approach and the most telling to any problem in prevention is early in life. Therefore, some form of child guidance is the most effective mode of attack in the prevention of mental disease.

The term "child guidance" covers a tremendous field. It means the co-ordination of a great many agencies. In fact it covers every branch of medical and sociological activity. There is no specialization in medical practice which is not involved. We have to deal with an attempt to prevent or eradicate physical abnormalities which may disturb nervous equilibrium, and an attempt to inculcate principles of right habit formation or correct early in life beginnings of faulty adaptations.

The attack on the problem of physical abnormalities should go back to parenthood. Many cases of congenital defectiveness, of nervous instability, may be traced to disease conditions in the mother—infectious, physiological and nutritional disorders. Hence, the obstetrician should be the first to start the solution of the mental hygiene of the individual. After birth the prevention and eradication of the physical defects which would contribute to nervous imbalance come within the scope at sometime of every medical practitioner.

This is only half the solution of the problem. Even with a reasonably sound organic make-up, the individual is still a liability unless he is properly reared and moulded. This means the inculcating of proper habit formation and the avoidance of abnormal defense reactions. This problem is both sociological and psychological. We train men and women in various vocations whereby they may earn a livelihood, but we do next to nothing to teach them to be parents. We breed our livestock and control their environment on a much higher plain of scientific endeavor than we do our off-spring. The majority of children are accidents, born into a haphazard, hit-or-miss environment. The question of survival of emotional balance is largely a matter of chance. Parents should be taught in methods of inculcating emotional control, the avoidance of emotional habituation by avoidance of emotional atmospheres chronically in adolescence, sex education, and general sanity in child rearing. Life should be neither too hard nor too easy in its beginnings, and the striking of a happy medium is a delicate matter which must be fitted more or less to each individual case in a common sense manner, and not left to chance.

We do not propose by these methods to displace the home. The home is fundamental in our present system and the best results proceed from the proper kind of home. What is proposed, however, is to attempt to make the home more effective when possible. The problem of rearing children cannot be left to instinct. It should be guided, as should all other acts, by experience. Growth and betterment of methods can be attained only by a multiplication of individual experience for the benefit of everyone concerned. That is the only way to make progress in any endeavor. Individual experience alone is inadequate. By co-ordinating and recording individual experience and passing these on to others progress may be obtained.

On the other hand, there are instances when a substitute for the home must be found. This occurs more particularly with orphaned children and where the so-called home is of such a character as to make proper reformation into an adequate environment impossible. This latter condition unfortunately is all too prevalent and constitutes a larger problem. It is from

this source that the state draws the heaviest economic burden of misfits—criminals and otherwise maladjusted.

So the whole problem hinges around the control of environmental factors in the beginnings. This means environment in the broad sense, both exogenous and endogenous. This begins prenatally and is most potent throughout the formative period; up to the age of fourteen to sixteen. Dorsey has said that, "Mohammed, born on Beacon Hill, would probably have gone to Harvard and been a Unitarian." John B. Watson, in his well controlled experiments on growing children, has pretty well shown that the inheritance factor in personality make-up is minor. He has brought out most forcibly the tremendous influence of environment in its broadest sense upon future behaviour. The number of combinations inherent in personality make-up makes it impossible to predict beyond peradventure, but it is self-evident that environment, properly controlled, will give rise to the best possible results.

This tremendous problem of child guidance by a proper liaison between the agencies of education and medical control—social agencies, scholastic agencies, psychological guidance and strict preventive and corrective medicine, in its solution, is the only rational cure for our mental ills. The economic problem involved is not nearly so monumental as that involved in the constantly increasing demand for the care of end results. It is a surprising fact that a comparison between the birth rate and the rate of increase in mental diseases would lead to the logical conclusion that there will ultimately be more insane than sane individuals. We hope this is a *reductio ad absurdum*. The eradication of the substratum of misfits can be attained only by the slow process in child guidance, so that mental sanity may "move forward on the feet of little children."

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THE FIVE POINT CHILD AND SCHOLASTIC CREDITS.*

By LAWRENCE T. ROYSTER, M. D., University, Va.

The attitude of society toward the child in various periods of history furnishes an interesting theme for study; in fact the advance of civilization is best appraised by the regard in which the child is held and the care given it. A relatively short time ago the child was looked upon as a burden to the family and a liability to the state, nor did this attitude change until man power for armies and leadership in the economical and political world were threatened by a low birth rate and a high infant mortality. The world then awoke to the realization that men and women could not be had to carry on its work without an adequate number of healthy children, and the child was recognized as an asset.

The first step taken when these facts were recognized was the establishment of hospitals for the special care of children. These hospitals were far from suited to the needs of the patients, the number of attendants totally insufficient to properly care for them, and the result was inevitable, a death rate scarcely less than before their founding. But the beginning had been made, and the effort to ameliorate the situation was honest.

For a long time education was a possession possible only to the classes, but when it was recognized that the only safe citizenry was an educated one, there was created a demand for universal enlightenment. This awakened interest was largely due to the prophetic vision of that greatest of all democrates—Thomas Jefferson—and his dogmatic assertion that a people was capable of self-government only if educated. Slowly at first, but soon by leaps and bounds, state supported schools grew in size and number until the great American public school system was developed, another criterion of the advance of civilization.

The popularity of the public school increased with such rapidity that numbers of pupils far in excess of the capacity of the limited number of available teachers, were enrolled, carried through the mill, and turned out as "finished products", apparently in the same spirit that manufactured goods were produced in commercial factories, in mass production, often at the expense of quality. The greatest fault of the public school system of today is that it is a "system". It is suited necessarily to the needs of the vast number of average children, the exceptional child, either above or below the average, being lost sight of and inevitably neglected. Many of the faults of the educational system are, however, being overcome year by year and many improvements are manifest.

For many years the scholastic education of

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the child alone was considered. School sanitation was slow in being recognized and the health of the pupils totally disregarded. When, however, it was recognized that the mental advance of children might be, and often was, dependent on the state of health, or physical well being, a new factor entered into the educational problem. Attention to the health of the child was furthered by the rapid popularization of the Child Welfare Movement. The first "Medical Inspection" of school children was in the interest of the detection of infectious disease and the prevention of its spread. Subsequently, an effort was made to discover to what extent childen fail to learn and progress because of physical and mental defects, malnutrition and fatigue.

Few of the younger generation of physicians and educators can appreciate the struggle of a few far-seeing pioneers to have the importance of general examinations of all school children recognized. Opposition came from the medical profession, school authorities and parents, and those who advocated such examinations were looked upon as visionaries and fanatics. Truth prevailed at last, however, medical examinations became a routine part of the school program, and the incidence of sickness was reduced and attendance on school definitely increased.

Today we are in position to study large groups of children in the public schools, to determine what the normal child is, and to do more constructive work for the health of children and the adults of the next generation, than at any previous time. Virginia, among other states, is doing her part, and as a step in this direction has adopted a *minimum* standard known as the "Five Point Child". As stated, this is a *minimum* with the following points:—Hearing must be good, tonsils must be free from evidence of disease or have been removed. There must be no decayed teeth or cavities must be filled. Vision must be good or defects corrected by glasses; and the weight must be up to the average for a given height as a guide to the state of nutrition.

Periodic examinations of the children are made to determine these facts and they are graded *physically* in accordance with the findings. Recognition is given those measuring up to the standard by means of stars placed on cards hung in the schoolroom, and at the end of the session certificates are given the "Five Pointers", signed by the State Health Commissioner and the State Superintendent of Education. A further effort is made to have the child maintain this standard, for it must be remembered that a child may be a five point child this session and only a four point or a three point child the next session; in fact conditions may change from month to month. Results are obtained through securing the co-operation of parents, and what is more important,—the co-operation of the children themselves. Very often parents are indifferent, and results must be secured through the co-operation of the child alone, who develops a pride in gaining the five point standard. Children not only often insist that their eyes be examined, their teeth filled, and their tonsils removed, but demand the right quantity and quality of food, and in many instances secure the benefits of all through their own efforts.

Regular attendance at school (fewer absences per child) is noticeably more consistent among the five point children than among those possessing uncorrected defects. It is astonishing to find how many schools have anywhere from 100 to 50 per cent five pointers in the short time this plan has been in operation. So far an effort has been made only to make those already in school to measure up to this minimum standard; and this must be extended so that examinations will include pre-school children in order that they may enter school "five pointers". It is well recognized that the period of the greatest neglect of children is between the end of the second year and the time of entering school—the period known as the run-about or pre-school age.

The *minimum* must be raised, however, for a star is brilliant in proportion to the number of its points. Thus there must be added to the existing *minimum* an assurance of freedom from tuberculosis. The posture—often a guide to the state of nutrition and fatigue—must be correct. Teeth must not only be clean and cavities filled, but the occlusion must be good. And finally, each child on entering school must have been inoculated against those diseases, whose prevention through inoculation has been proven. On the health of the child from birth to adolescence depends not only in large measure the scholastic progress, but also the future carrying on power of the individual—be he laborer, business man, profesional man, or most important of all, parent

—in fact the stability of the citizenry of the next generation.

Thus we see that an important branch of education has been introduced into the curriculum of the public school system, for what could be more important than the knowledge of how to take care of one's health, and this the child is learning. If, therefore, we admit the truth of this, why should not children be given "credits" on their scholastic standing for physical well-being?

I therefore make this plea: That as soon as practicable the school authorities of Virgina allow "credits" on class standing for physical fitness as determined by our minimum standard—the five points—in proportionate ratio to their other studies; and that a child entering school as a five point child, be given these credits in advance. Of course a child who loses one or more points of the star will be deprived of a proportionate number of credits.

(Editor's Note: Following the reading of this paper, the Virginia Pediatric Society adopted a resolution that this paper be published in the Monthly and in the Virginia Journal of Education, that it might reach the physicians of the State as well as the teachers and State educational authorities.)

SENILE EPILEPSY (EPILEPSIA TARDA).

By FRANK H. REDWOOD M. D., Norfolk Va.

Convulsions occurring in an individual who has passed the age of forty years give the physician much concern as to the causation of the attack. Why anyone should have periodic fits is a question that cannot be answered. All that one can say is that there must be a factor, as yet unknown, that precipitates the attack and this factor must be variable in its effect upon each human organism. A sudden disturbance of the cerebral circulation has been known to produce convulsions and I have seen a bitemporal hemianopsia lasting half an hour in a healthy patient, after surf bathing, showing that deranged cerebral circulation may interfere with the normal cerebral mechanism.

In the past eight years I have seen seven cases in my own practice and in consultation which can be classified as Senile Epilepsy or Epilepsia Tarda. Reisman,[1] in a recent publication, reports twelve cases and suggest the following classification:

1. The arteriosclerotic group.
2. The hypertensive group.
3. The mixed hypertensive-arteriosclerotic group.
4. The endocrine dysfunction group including diabetes mellitus, dyspituitary and hypothyroid disorders.
5. The cardiac group including Stokes-Adams disease and aortic stenosis.

Reisman says that the groups are by no means sharply defined but merge one into another. This was true in my cases.

Case No. 1.—Mr. T. L. Age 49. For the past year has had attacks of vertigo lasting a few minutes and of frequent occurrence. November 26, 1927, the day before coming under observation he suddenly felt dizzy and peculiar and in a few minutes he had a generalized convulsion. After he regained consciousness he was clouded mentally for half hour and then felt as good as before. Never had convulsions in childhood.

Examination: Blood pressure 180/95. Weight 192. Heart sounds indistinct but no murmurs heard. The arteries were moderately thickened. Chest and abdomen negative. Reflexes normal. Fundi normal. There were a few pus cells in urine, otherwise negative. Wassermann negative. Blood count, blood sugar and calcium within normal limits. Urea nitrogen 14 and urea 31.5. Electrocardiogram showed distinct evidences of myocarditis. November 30, 1927. Patient was referred back to family physician and advised digitalis with some sedative. February 2, 1928. Has attended to his duties and has had no further convulsions.

Diagnosis: Senile epilepsy and myocarditis.

Case No. 2—Mr. G. T. Age. 50. June 19, 1923. One month ago he suddenly became unconscious and had a convulsion that lasted ten minutes. When he re-acted he felt weak and heart was fast. For one month he has averaged from two to three attacks weekly. Was forced to give up his work on account of convulsions. No childhood convulsions.

Examination: Blood pressure 110/80. Weight 150. Arteries slightly sclerotic. Heart shows no murmurs but the sounds are indistinct and distant. Heart is enlarged. Pulse is slow at times. No irregularity. Electrocardiogram shows definite myocardial weakness. Urea nitrogen 26. Urine, blood count and Wassermann negative. He was treated with digitalis and bromides. February 18, 1928. Is working every day and has had no convul-

*Read before the Norfolk County Medical Society, May, 1928.

sions in four years although he says at times he feels weak.

Diagnosis: Senile epilepsy and myocarditis.

Case No. 3.—Mr. W. B. Age 55. October 24, 1927. Ten months ago the patient had an unconscious attack lasting several days, during which he had a number of general convulsions with tongue biting and foaming at the mouth. In two weeks he was feeling well and went back to work. Six months later had another convulsion lasting thirty minutes. Three months later had another lasting fifteen minutes. The convulsions are ushered in by a pressure in the head and flushing of the face. Past history is negative.

Examination: Blood pressure 140/100. Weight 125. The heart shows an occasional extra-systole but the sounds are clear and distinct. Pulse 99. The abdomen is pendulous and there is some oedema of the legs. Reflexes normal. Fundi are distinctly outlined, no hemorrhages seen and the vessels appear normal. Electrocardiogram showed distinct myocardial changes. The urine showed a medium ring of albumen with occasional hyaline casts. Blood count. Wassermann. gastric analysis, calcium and blood sugar normal. Urea nitrogen 18 and urea 39. He was given digitalis and luminal and has had no further trouble.

Diagnosis: Senile epilepsy. myocarditis and chronic nephritis.

Case No. 4.—M. J. Colored. Age 45. October 8. 1927. Has had fits for two years usually occurring around menses. Recently has had two or three convulsions a month—last ten to fifteen minutes—falls, bites tongue.

Examination: Blood pressure 190/100. Weight 210. Heart is enlarged to the right, regular, no murmurs. Peripheral vessels moderately thickened. Wassermann and urine negative. February 20, 1928. As long as she takes luminal she does well but if it is discontinued for a week she has a convulsion.

Diagnosis: Senile epilepsy.

Case No. 5.—Mr. L. W. Age 58. February 12, 1926. Patient always healthy until December, 1925, when he had a convulsion while asleep that lasted one hour. Five weeks later had another convulsion while asleep. Between these two attacks he felt well except for slight dizziness.

Examination: Blood pressure 205/130. Weight 200. Heart was regular, no murmurs. Pulse 74. Peripheral arteries much thickened. Nervous system normal. Severe pyorrhoea. Urine, Wassermann and blood count normal. Blood sugar 80, blood urea 26, non-protein nitrogen 49. March 23, 1926. No convulsions. Had all teeth removed. Blood pressure 210/120. February 23, 1928. Doing well. Urine shows an occasional hyaline and granular cast. Urea nitrogen 16.3. Urea 34.8. Blood pressure 165/120. Has been on luminal for two years.

Diagnosis: Senile epilepsy and chronic nephritis.

Case No. 6.—Mrs. V. G. Age 55. December 11, 1919. Four years ago had a convulsion. One year later had another followed by another in eighteen months. Four weeks ago had another convulsion. The fits lasted one and one-half hours, foaming at the mouth and biting tongue.

Examination: Weight 150. Heart enlarged. No murmurs. Blood pressure 180/100. Arteries much thickened. Neurological survey normal. The fundi showed the vessels to be tortuous. Slight oedema of the ankles. Two abscessed teeth. Urine and Wassermann test negative. X-ray showed Paget's disease of the skull. December 22, 1919. Had an attack today lasting eight minutes—bit her lips—no aura.

This patient was not greatly benefited by any treatment and died two years later with a cerebral hemorrhage.

Diagnosis: Senile epilepsy. Paget's disease of skull. hypertension and arteriosclerosis.

Case No. 7.—Mrs. T. S. L. Age 58. March 11, 1926. Patient had been troubled with severe occipital and frontal headache for several weeks. Five days before this examination suddenly had a convulsion during the night, bit her tongue—lasted twenty minutes.

Examination: Weight 163. Blood pressure. 195/100. Heart regular and there was a systolic murmur at the apex. Peripheral arteries sclerotic. One abscessed molar tooth. The vessels of the eyegrounds were tortuous. No neurological signs. Wassermann and urine negative. Blood count showed a slight secondary anemia. Urea nitrogen 18; urea 40; uric acid 3.8 mg.

This patient has been on luminal, her bowels have been kept regular and she has had no further trouble.

Diagnosis: Senile epilepsy.

One other case might have been included in this series but it was thought that the evidence pointed more to Adams-Stokes' syndrome than to a cerebral cause for the convulsion and therefore was not included.

Studying these case histories, there are several points of interest brought out. All had recurrent grand mal attacks, five of which occurred in the day only and two were nocturnal only. There were three women and four men with an average age of fifty-two years plus, the oldest fifty-eight and the youngest forty-five.

Five of the cases may be grouped as hypertensive and two as arteriosclerotic. Only two cases showed ophthalmoscopic pictures of arteriosclerosis but all of the cases had clinical or electrocardiographic evidences of heart disease and all but one showed palpable evidence of general arteriosclerosis. So that in all the cases the backgroud is judged to be some disturbance of the circulation.

The results of treatment of these seven cases show that one patient has died, three have had other convulsions since the diagnosis was made and treatment instituted, and three have had no further convulsions.

In discussing the mechanism concerned in the production of senile convulsions, the recent work of Bordly and Baker[2] deserves serious attention. They have shown that it is possible to have cerebral arteriosclerosis without clinical evidence and that such findings were demonstrated in all of their cases of so-called "essential hypertension". Further, they say, the blood pressure falls as the cerebral circulation improves and arteriosclerosis in most cases of persistent hypertension is not a widespread process but confined chiefly to the smallest arteries of the brain and kidneys. They feel that obstruction to the cerebral circulation is more concerned in hypertension than obstruction to the renal circulation.

Russell,[3] in 1909, as brought out by Reisman, held that the fundamental factor underlying both the ordinary faint and the epileptic fit is cerebral anemia. The ancients thousands of years ago were familiar with the fact that compression of the carotids produced coma. Fits have been produced in non-epileptic but definitely arteriosclerotic patients by carotid compression. This cannot be done in people with normal arteries.

I believe that Epilepsia Tarda is a rather distinct clinical entity depending upon a background of cerebral arteriosclerosis, probably in the brain stem, producing a cerebral circulatory inadequacy.

To label a case as one of senile epilepsy during an attack should never be done as there are a large number of conditions in which a convulsion may be a symptom. The chief diseases that may be ushered in by a convulsion in a patient above forty are apoplexy, general paresis, brain tumor, particularly of the frontal lobe, and uremia. But when patients have had more than one convulsion and between the attacks have been fairly comfortable, it is probable that they belong to one of the groups of epilepsia tarda.

The treatment is symptomatic, always bearing in mind the underlying pathological process. Attention should be paid to elimination. All psychological and bodily irritation should be eliminated as far as possible. The diet should be non-irritating in character with a reduction of proteids and salt. Of the drugs, luminal is always in order and digitalis when indicated.

BIBLIOGRAPHY.

1. Reisman, D. Epilepsia Tarda. *Annals of Internal Medicine.* 1-273, 1927.
2. Bordley, J., III, & Baker, B M., Jr. Arteriosclerosis of Cerebral Vessels and Pathogenesis of Hypertension. Bull. Johns Hopkins Hospital, XXXIV, 229, 1926.
3. Russell, A. E. Goulstonian Lectures. Disorders of the Cerebral Circulation and Their Clinical Manifestations. *The Lancet*—1-963, 1909.

503 *Medical Arts Building.*

MECHANICAL METHODS AIDING LOCALIZATION OF SPINAL CORD COMPRESSION.*

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In recent years, the increase in our practical knowledge of the anatomy and physiology of the central nervous system and its surrounding fluid and membranes, has led to the development of several new mechanical and laboratory methods which offer material assistance to the clinical neurologist in improving the accuracy of his diagnosis of spinal cord tumors. Practically all these methods are dependent on the fact that a growth within the spinal canal blocks it to a greater or less degree, thus pre-

*Work done under the direction of Dr. Frederick P. Moersch, Section on Neurology. The Mayo Clinic. Submitted for publication July 12, 1928.

venting a free flow of cerebrospinal fluid within it. Extramedullary spinal cord tumor is perhaps the most common clinical cause of such block, although it may result from other conditions, such as fracture of a vertebra, extradural growths, and chronic arachnoiditis.

Since Quincke developed the technic of lumbar puncture in 1891, alterations in the cerebrospinal fluid in the presence of various pathologic changes have been studied extensively. It has been known since 1908[12] that if the spinal canal is blocked, fluid thus enclosed in loculi undergoes definite change probably the result of stasis, the most apparent of which are xanthochromia and rapid clotting due to increased protein content. Even in cases in which the canal is only partly occluded moderate changes of a similar nature take place.

Comparatively recent studies in the physiology of the cereberospinal fluid have shown that its circulation begins from the lateral ventricles, then through the several foramina to the subarachnoid spaces where it finds egress directly into the venous sinuses by way of the arachnoid villi and their various modifications. Its flow in the spinal canal is thus chiefly in the caudal direction, although there are some lesser currents of flow in the opposite direction. The enclosing membranes which contain the spinal fluid are semipermeable, and contain the fluid as in a closed sac. Any increase in pressure intracranially will thus increase the cerebrospinal fluid pressure throughout the sac and any such change in pressure may be noted through a lumbar puncture needle inserted in the canal. The common procedure of jugular compression, as demonstrated originally by Queckenstedt, by increasing the intracranial venous pressure indirectly increases the cerebrospinal fluid pressure which is readily measured by means of a manometer attached to a spinal puncture needle. It is evident also that, if a complete block exists in the spinal canal, jugular compression will not cause any change in pressure in the fluid distal to the block. If a partial block exists in the canal, a much slower rise in pressure occurs than if the canal were entirely occluded.

Several problems confront the neurologist when yellow spinal fluid with demonstration of a complete or partial block in the canal is encountered at the time of spinal puncture. The clinical history and course must give much weight to the ultimate conclusion as to the nature of the lesion within the canal. If surgery is considered, perhaps nothing is more important than a determination of the upper and lower levels of the block. The upper level can be estimated usually by careful clinical examination for which often there can be no substitute. But the lower level of the lesion usually defies clinical testing. At least three methods, other than the clinical have been developed by which the upper as well as the lower levels of the block within the spinal canal may be determined.

Multiple Spinal Punctures

The possibility of this method was demonstrated first in 1913.[8] It resolves itself to the performance of a series of spinal punctures in

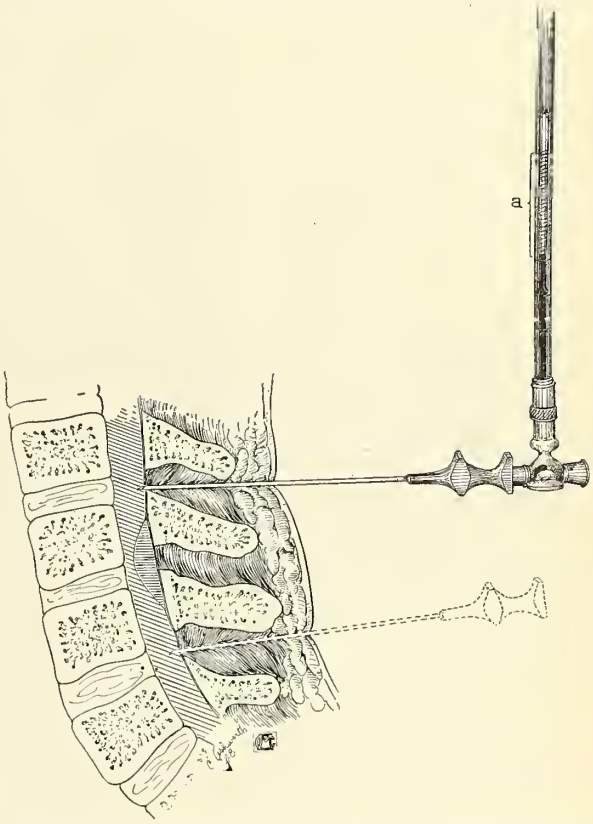

Fig. 1.—Diagrammatic sketch to illustrate multiple punctures in locating the level of intraspinal block. Needle (interrupted lines) below tumor yields yellow fluid and no response to jugular pressure (manometer not attached). Above tumor, needle (manometer attached) may yield clear or slightly yellow fluid with prompt response (a) to jugular pressure.

successive interspaces thereby determining the intervertebral space immediately above and below the tumor by the degree of promptness or absence of response of the fluid to jugular compression. Figure 1 illustrates the method diagrammatically. Puncture below a tumor

causing complete blockage of the canal will not respond to jugular compression; puncture above the tumor will give prompt response. If the puncture below the tumor yields a slow response to jugular compression, this offers sufficiently differentiating evidence to indicate the level of the lesion.

In performing multiple punctures above the level of the second lumbar vertebra there is always the possibility of passing the needle directly into the spinal cord and thereby doing more harm to the patient than the results might warrant. Such punctures must therefore be left to the expert. There is a possibility also that the needle may pass into the canal at the level of the tumor. If the growth is intramedullary and approximately fills the canal, even an experienced operator cannot avoid touching the cord with the tip of the needle. If the growth is extramedullary, the needle may strike a nerve root passing around the tumor and cause pain or paresthesia; it may fail to strike fluid, or it may produce bloody fluid. It may be possible to infer from some such difficulty that the level of the lesion has been reached.

Objection is often raised to multiple punctures due to fear of unnecessary trauma or pain. In proper estimation and defense of this method it should be stated that a skillful operator using local anesthesia can perform multiple spinal punctures practically without harm or pain to the patient. Similar punctures in the higher levels of the canal are much more difficult and it would perhaps be advisable in most cases to limit the method of multiple punctures in locating tumors to an area ranging from mid-dorsal to the sacrum if the operator is experienced, and in the lumbar region only, if the operator's experience is limited.

Forty Per Cent Iodized Oil

Forty per cent iodized oil was used first by Sicard and Forestier in 1921 to determine the level of compression within the spinal canal. It is composed of poppy-seed oil and iodine; and being opaque to the roentgen-ray is almost unique in indicating an intraspinal block. Since its introduction it has been employed extensively as an aid in locating spinal cord tumors. The perfection in technic of the cisternal puncture by Ayer, at approximately this same date pointed out the best available avenue for the insertion of the oil into the spinal canal.

The technic in administering the oil involves essentially that of cisternal and lumbar puncture. Following administration the oil may be observed passing down the canal by means of the fluoroscope. If the block is only partial, the passage of the oil is slowed, and its shadow deflected, sometimes fragmented, but altered unmistakably in any case. If the oil is not stopped in its passage, it eventually comes to rest in the caudal extremity of the dural sac at the level of the second sacral vertebra. Permanent roentgenograms of the descending oil may be taken at any level of its descent, or when it stops at a definite block, as in Figure 2, a roentgenogram taken in a case in which the oil was injected elsewhere prior to the patient's admission to the clinic. This roentgenogram will serve to illustrate some of the advantages and disadvantages in the use of the oil. The patient was a man, aged thirty-six, a worker in enamel, who three years prior to admission began to notice the gradual onset of an aching pain, or "lumbago", in the lower part of the

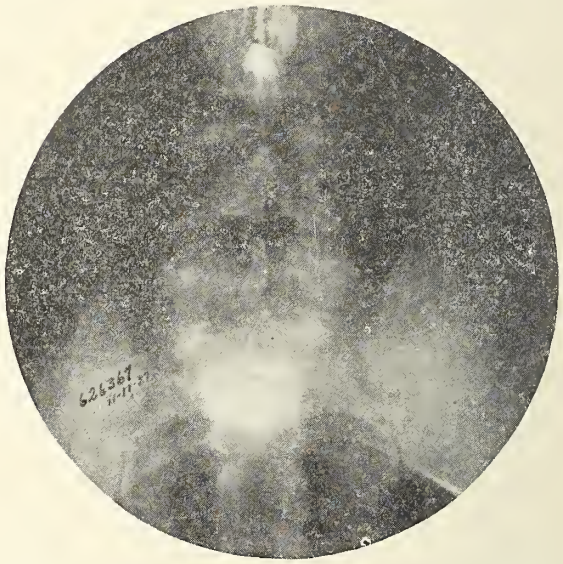

Fig. 2.—Lower lumbar vertebrae. Spinal cord tumor (40 per cent iodized oil injected elsewhere). Air may be seen extending to lower part of fourth lumbar vertebra (arrow).

back. Eleven months prior to admission he began to experience a dull pain in the right lower abdominal quadrant, and at the same time an extension of the pain in the back to the hips and the upper posterior part of the right thigh. A month later appendectomy was performed elsewhere, followed by slow convalescence. Two months after the operation, he attempted to resume work, but the old type

of pain returned severely, this time in the posterior part of the thighs, extending to the level of the knee on the right side. Since then the pain had been constantly present, being aggravated at night, and by motion and coughing. Six months prior to admission he noticed that both lower extremities had become smaller, especially the right. He had grown progressively worse so that on admission he walked with crutches due to the "weakness in both kness". A diagnosis of sciatica was made elsewhere and foci removed. About a month prior to admission a cisternal injection of 40 per cent iodized oil was carried out, thus affording evidence of the nature of the lesion suspected. Neurologic examination showed gradual sensory loss beginning at the level of the first lumbar segment on the right and the third lumbar segment on the left with partial perianal preservation. Paralysis in the muscles supplied by the same roots was noted. Spinal puncture was performed in the interspace between the fifth lumbar and first sacral vertebrae. There was no response to jugular pressure, and the fluid was yellow and coagulated in a few minutes. Five cubic centimeters of fluid was withdrawn and an equivalent volume of air injected. The roentgenogram (Fig. 2) showed the oil, which had been injected elsewhere, lodged at the lower level of the third lumbar vertebra. The compression was diagnosed as present at a level extending from the lower part of the third to the upper part of the fourth lumbar vertebra. At operation a neurofibroma was found at the level diagnosed. An intraspinal portion, 2 by 1 by 1 cm., and an extraspinal portion, 5 by 2.5 by 1 cm., were found and removed. The oil had caused a severe reaction around the fibers of the cauda equina, "gluing" them together with many adhesions.

Forty per cent iodized oil with specific gravity lower than that of the spinal fluid may be used. It should be injected into the canal below the level of the tumor and allowed to rise. Roentgenograms will then reveal the level of the block if any exists.

Injection of Air

A third method to locate block in the spinal canal is afforded by the injection of air into the spinal canal below the level of the tumor. This procedure was suggested first by Dandy in 1919. It has been used infrequently since then in diagnosis.[1, 3, 4, 14, 15] Essentially the same method has been employed also at times in the treatment of various meningeal inflammations. The method has not been particularly popular in diagnosis, perhaps due to the fact that a complete spinal block is necessary before the procedure should be attempted; otherwise the air will pass the partial obstruction in the canal and locate in or about the cerebrum, in one of the ventricles or some part of the subarachnoid space and produce at least a severe headache.

The technic differs little from that of the ordinary routine lumbar spinal puncture. The puncture should be made as low in the canal as possible, preferably in the fifth lumbar to first sacral interspace. Absence of response to jugular compression must then be confirmed. Assuming that the tumor is mid-dorsal, fluid is then withdrawn to the amount of 10 to 20 c.c., 3 to 5 c.c. at a time, followed immediately by the injection of 3 to 5 c.c. of air. The head of the table may be elevated slightly during the operation. Roentgenograms of the spine are then taken antero-posteriorly while the shoulders of the patient are elevated 12 to 14 cm. above the horizontal position.

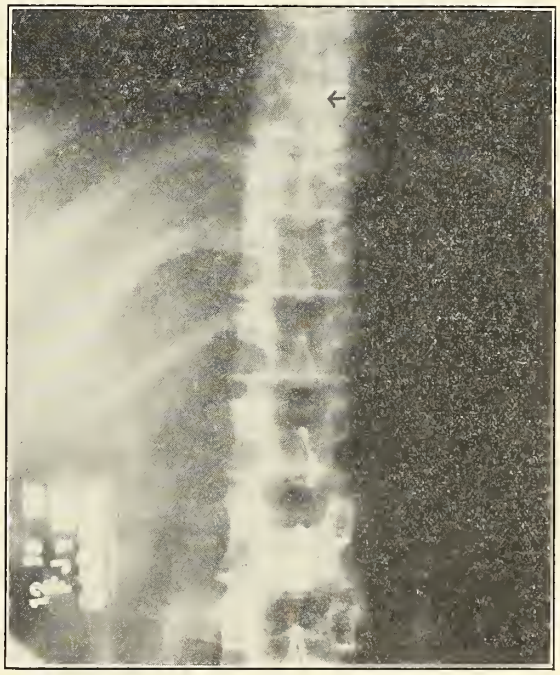

Fig. 3.—Lower dorsal and upper lumbar vertebrae. Spinal cord tumor. Air injection. Upper level of column of air at upper level of ninth dorsal vertebrae (arrow).

Figure 3 is the roentgenogram in a case of spinal cord tumor in which air was injected.

The patient was a boy, aged seventeen, a high school student, who eighteen months prior to admission to the clinic had noticed the onset of weakness in the right lower extremity. Following a spinal puncture elsewhere, fifteen months after the onset, spastic paraplegia and sensory loss extending to the waist line developed within a few weeks. There was little progress in symptoms, and at the time of admission he presented the picture of spastic paraplegia without complications. He had not had pain and sphincter control was little affected. Neurologic examination showed complete sensory loss from the level of the tenth dorsal segment downward with spastic paraplegia. There was slight perianal sensory preservation. Spinal puncture showed a lack of response to jugular compression, and a yellow fluid coagulated within several minutes. On the removal of 10 c.c. of cerebrospinal fluid an equivalent amount of air was injected through the spinal-puncture needle inserted in the fourth lumbar interspace. The upper level of the air is shown at the upper level of the ninth dorsal vertebra. The lower level of the compression was thus diagnosed by injection of air as between the eighth and ninth dorsal vertebrae, and the upper level by clinical test at approximately the seventh dorsal vertebra. At operation an extramedullary neurofibroma was found in the right side of the canal "extending slightly over the dorsum of the cord but which had displaced the cord producing a marked depression opposite the intervertebral foramen between the seventh and eighth dorsal vertebrae".

Comment

If there is complete block of the spinal canal the method of choice is undoubtedly that of injection of air. The air is soon absorbed and does not leave a local reaction so far as is known, thus obviating the outstanding objections to the use of the oil. Only one puncture is required, which overcomes the chief objection to the multiple puncture method. Only the lower level of the tumor is visualized by this method, the upper requiring determination by careful clinical examination.

The use of 40 per cent iodized oil involves two serious objections, namely, the compound is not readily absorbed and its irritating properties may result in chronic inflammation and formation of scar tissue.[7, 9] Its ultimate fate, if it is allowed to remain in the spinal canal indefinitely, is not known.

If a partial block is present and if multiple punctures are not permitted, the clinician must rely on his clinical examination, and the use of 40 per cent iodized oil only as a last resort to aid localization. The clinician's problem

Fig. 4.—Dorsal vertebrae; air injection. Inoperable osteochondro-sarcoma in right side of chest, with upper level of spinal cord compression at the level of the fifth dorsal segment. Upper level of column of air at the level of the seventh dorsal vertebra (arrow).

in spinal cord compression is chiefly that of localization. Any method which increases the accuracy of this diagnosis with a minimum of risk to the patient, reduces the ultimate operative risk by diminishing the necessary extent of surgical trauma. There is no doubt that the three methods briefly reviewed here offer to the clinician valuable additions to his armamentarium when confronted with a growth which blocks the spinal canal and compresses the spinal cord.

Bibliography

1. Alwens, W. and Hirsch, S.: Ueber die diagnostische und therapeutische Bedeutung der endolumbalen Lufteinblasung (Enzephalographie). *München. med. Wchnschr.*, 1923, i, 41-44.
2. Ayer, J. B.: Puncture of the Cisterna Magna. *Arch. Neurol. and Psychiat.*, 1920, iv, 529-541.
3. Bingel, Adolf.: Intralumbare Lufteinblasung zur Höhendiagnose intraduraler extramedullärer Prozesse und zur Differentialdiagnose gegen-

über intramedullären Prozessen. *Deutsch. Ztschr. f. Nervenh.*, 1921, lxxii, 359-370.
4. Bingel, Adolf.: Diagnostische Vorzüge der Lumbalpunktionen unter Gaseinblasung (ohne Berücksichtigung des Röntgenserfahrens). *Deutsch. Ztschr. f. Nervenh.*, 1922, lxxv, 155-164.
5. Cushing, Harvey: Studies in Intracranial Physiology and Surgery. London, *Oxford University Press*, 1926, 142 pp.
6. Dandy, W. E.: Rontgenography of the Brain After the Injection of Air Into the Spinal Canal. *Ann. Surg.*, 1919, lxx, 397-403.
7. Maclaire, A. S.: Lipiodol in Neurosurgery, with a Report of a Case with Deleterious Results. *Am. Jour. Med. Sc.*, 1925, clxx, 874-880.
8. Marie, Pierre, Foix and Robert: Service que peut rendre la ponction Rachidienne pratiquée à des éstages différents pour le diagnostic de la hauteur d'une compression médullaire. *Rev. neurol.*, 913, xxi, 712.
9. Mixter, W. J.: The Use of Lipiodol in Tumors of the Spinal Cord. *Arch. Neurol. and Psychiat.*, 1925, xiv, 35-45.
10. Queckenstedt: Zur Diagnose der Rückenmarkskompression. *Deutsch. Ztschr. f. Nervenh.*, 1916, lv, 325-333.
11. Quincke, H.: Die Lumbalpunktion des Hydrocephalus. *Berl. klin. Wchnschr.*, 1891, xxviii, 929-933 and 965-968.
12. Sicard, J. A. and Descomps, P.: Syndrome de coagulation massive, de xanthochromie et d'hématolymphocytose du liquide céphalo-rachidien. *Gaz. d. Hop.*, 1908, lxxxi, 1431.
13. Sicard, J. A. and Forestier, J.: Méthode radiographique d'exploration de la cavité épidurale par le lipiodol. *Rev. neurol.*, 1921, xxxvii, 1264-1266.
14. Waggoner, R. W.: Encephalography. *Am. Jour. Med. Sc.* 1927, clxxiv, 459-466.
15. Wideroe, S.: Ueber die diagnostische Bedeutung der Intraspinalen Luftinjektionen bei Rückenmarksleiden, besonders bei Geschwülsten. *Zentralbl. f. Chir.*, 1921, xlviii, 394-397.

THE ACUTE ABDOMEN.*

By RICHARD H. MEADE, JR., M. D., University, Va.

In discussing such an inclusive subject as the acute abdomen one must set certain definite limits and keep within them. My object therefore is to describe briefly the chief components of the acute abdomen, then to point out the more important causes of it and some of the conditions often confused with it.

As I understand it, the term, "Acute Abdomen" refers to that type of abdominal disease which calls for more or less immediate surgical intervention. The outstanding characteristics are: abdominal pain; nausea and vomiting; tenderness; muscle spasm; and less frequently, distention, and mass formation. Of these, pain is the outstanding one and usually the first to appear. Now, it is known that pain may be caused by a number of different factors and, unless this is borne in mind, confusion is apt to occur. Very briefly stated, one may consider pain to be referred from the underlying structures to the abdominal wall by a simple spinal reflex as in the ordinary case of acute appendicitis, or it may be the result of a longer and more complex reflex as the abdominal pain occurring in certain cases of coronary occlusion. This mechanism also holds true for the associated tenderness and muscle spasm. Nausea and vomiting, however, bear no such close relationship to the site of trouble. Among the conditions that produce these latter symptoms are:—irritation of the sympathetic nervous system by the acute distention of a hollow viscus, or by the interference with the circulation of one of these; intestinal occlusion; overloading the stomach; and central irritation due to toxemia. Abdominal distention may be due to intestinal obstruction, or to toxemia as occurs in some cases of pneumonia. The presence of a mass is an occasional feature of the acute abdomen and may be inflammatory, neoplastic, or due to an enlarged organ. Fever and leukocytosis of some degree are also usually present.

John B. Deaver has aptly said, that without the presence of an abdominal operative scar one should think, first, last, and always of acute appendicitis as the cause of the acute abdomen. In the presence of such a scar one should think of acute intestinal obstruction due to an adhesive band. This dictum, I believe, holds true for all ages.

It is convenient in discussing the causes of the acute abdomen to take up first those conditions as found in childhood. In the newborn, intestinal obstruction is perhaps the commonest cause and this is due to some congenital anomaly.

In older children, the causes of the acute abdomen may be cenveniently grouped into the inflammatory, and the mechanical. Under the heading of the former come appendicitis, mesenteric lymphadenitis, and primary peritonitis. Under the second heading comes intestinal obstruction due either to intussusception or to incarcerated hernia. In a study of 400 patients under the age of thirteen, having acute abdominal disease, Cohen, of New York, found that 312 were due to acute appendicitis. Now, appendicitis in young children is more dangerous than in older patients due to the tendency to rapid involvement of the general peritoneum.

*Read in a symposium on, "The Abdomen," before the Albemarle County Medical Society, June 5, 1928.

Its prompt diagnosis and treatment are therefore of great importance. Furthermore, the diagnosis is usually harder than in adults because of the defects in the history. The story of the characteristic sequence of events, epigastric pain, nausea, diffuse pain, and then localization in the right lower quadrant of the abdomen may be difficult to elicit. Then, one must rely on the physical findings. Here the combination of tenderness and muscle spasm localized in the right lower quadrant, together with a mild fever and leukocytosis, point to the diagnosis in the early stage. When peritonitis has developed, the signs are too apparent to miss and the need for surgical intervention patent.

Often indistinguishable from acute appendicitis is mesenteric lymphadenitis, especially when the ileocecal glands are involved. This process may be due to infection from the tubercle bacillus, or from some pyogenic organism. Unfortunately, there are no pathognomonic signs and the diagnosis is generally made at the operating table. Except when suppuration has taken place there is no need for operative interference.

Primary peritonitis of the pneumococcus, or streptococcus, variety occurred in only ten of the 400 cases of acute abdominal disease referred to before, but, of the children in this group under five years of age the streptococcus type made up 7 per cent of all the cases. It is thought to be the most serious acute abdominal lesion occurring in children, carrying a mortality of 80-90 per cent. These facts would seem to justify its brief consideration here. Its abdominal period is preceded by evidence of an acute upper respiratory infection. Then the child suddenly becomes very ill with a temperature of 104° to 106°. There is severe abdominal pain and vomiting. In this early stage although there is diffuse abdominal pain, mainly in the lower portion, there is usually no rigidity of the abdominal wall and the symptoms may be thought to be referred from the chest, as evidence of the recent throat infection is usually present. The leukocyte count is high with an increase in the percentage of polymorphonuclears. The disease is rapidly progressive up to death which usually takes place within two weeks of the initial respiratory infection unless operative measures are effective. As there seems to be no tendency toward localization, early operation is indicated. No recoveries have been reported without it.

Of the causes of acute intestinal obstruction in children, intussusception leads the list. The history of a previously well child suddenly having paroxysms of acute abdominal pain with vomiting and varying degrees of shock, and later passing blood stained mucus by rectum, is a well known symptom complex. On examination, one finds a pale child lying quietly but at frequent intervals drawing up its legs and crying with pain. Its abdomen is distended and if one can palpate a mass in the course of the colon, or in the rectum, the diagnosis is established. Immediate surgical interference is of the greatest importance.

Incarcerated hernia makes up a much less important group but its possibility should always be borne in mind.

Before leaving the discussion of the acute abdomen in children, I must call attention to the frequency with which acute intrathoracic conditions are ushered in with abdominal symptoms. It is not infrequent that pneumonia first manifests itself in these young patients by abdominal pain, nausea and vomiting. Examination in this stage will show abdominal tenderness which may extend quite low down, and which may be associated with muscle spasm. However, this spasm is not constant and usually can be felt to disappear at the end of a deep breath. The diagnosis depends on the examination of the chest, and on the other evidences of respiratory tract infection.

When one attempts to consider the chief causes of the acute abdomen in adults, such a mass of material presents that the forest can hardly be seen for the trees. Accordingly only a few of those more commonly encountered will be considered. As previously quoted, appendicitis is easily the most common cause of the acute abdomen. And though we all come in contact with it so often and many feel that it is a simple affair, statistics show that the mortality from it is on the increase. From 1920 to 1925 there was an increase of over 30 per cent in the death rate per 100,000 of population. In 1920 there were 11 deaths per 100,000 of population whereas in 1925 there was 14.4 deaths per 100,000. Guerry, writing in 1926, pointed out that the mortality from appendicitis was equal to the combined

death rate from ectopic pregnancy, pyosalpinx, gall-stones, and diseases of the pancreas, spleen and thyroid gland. And it nearly equalled the combined rate for gastric and duodenal ulcer, intestinal obstruction and gall-stones. It has been said that each death from appendicitis is due to a blunder on somebody's part. Whether it is the fault of the patient, his parents, or his doctor, makes little difference to him but a great deal to us. I think that it is quite generally agreed that cathartics should never be given when there is the slightest possibility of appendicitis. For it has been repeatedly shown that the rupture of an appendix and the subsequent peritonitis has been due in many instances to the action of a cathartic. If the appendix can be attacked in its earliest state of inflammation, the mortality should approach zero, just as in diphtheria the mortality bears a definite relationship to the time at which the antitoxin is administered. However dark this picture may seem, the operative mortality from this disease is very low in the hands of experienced surgeons. Guerry in 1926 reported on 2,593 consecutive cases that he had handled with only 15 deaths, or a mortality of only 0.58 per cent.

As to the diagnosis, too great importance cannot be put upon the history. The onset of the pain in the epigastrium with later localization in the right lower quadrant is the rule and the pain practically always precedes the nausea. In the examination of the abdomen one finds definite involuntary muscle spasm and tenderness. Usually it is in the right lower quadrant with the point of maximum tenderness over McBurney's point, but may be shifted according to the location of the appendix. It is very important to palpate the abdomen gently and with the patient as relaxed as possible. When two people examine an abdomen, the second will find more spasm and at times this slight increase will be enough to establish a wrong diagnosis and cause a needless, or even harmful, operation. In regard to the leukocyte count, though it is usually elevated somewhat above normal, one should not depend on this nor on an elevated temperature for we not infrequently find a badly diseased appendix when count and temperature are normal. Of course, when rupture has occurred and peritonitis developed, the picture changes markedly and doubt as to the diagnosis of a surgical condition no longer exists.

In this part of the country at least, the most frequent condition simulating acute appendicitis in women is acute inflammation of the uterine adnexa. Though this condition is usually bilateral, it may be confined to one side and frequently the manifestations are unilateral. When the right side is thus the seat of the signs and symptoms, considerable difficulty may arise in establishing the correct diagnosis. However, the history is of great importance and may be the deciding factor. Pre-existing leukorrhea, or more definite stigmata of gonorrhea, can usually be found. The pain rarely starts in the upper abdomen but is confined to the lower portion and tends to shift from side to side. The patient appears quite ill and usually has a rather high temperature and leukocyte count. There may be nausea and vomiting. The important diagnostic signs are: very low abdominal tenderness and muscle spasm, and the positive pelvic findings. In addition to the purulent vaginal discharge one finds by bimanual examination tenderness with, or without, induration and masses in the vaginal fornices. Movement of the cervix reproduces the abdominal pain. Although salpingitis is rarely met with in young children, several cases have been reported and its possibility must therefore be kept in mind. It is quite generally agreed that operation during the acute stage of salpingitis is unwise and its differentiation from acute appendicitis is therefore important.

While dealing with pelvic disease, one must consider ovarian cysts and pedunculated fibroids having twisted pedicles. Here the diagnostic point is the finding of a movable mass in the pelvis by bimanual palpation, and the origin and persistence of the pain in the lower abdomen. Of course when infection and peritonitis develop, the exact diagnosis may be impossible but the indication for immediate operation is apparent.

In ectopic pregnancy, the history of a delayed period is helpful, but not essential. The lower abdominal pain is severe and lancinating and inconstant. There may, or may not be vaginal bleeding. Of course when rupture takes place, the symptoms and signs of intra-abdominal hemorrhage dominate the picture and a real surgical emergency is apparent. Before the occurrence of this tragedy, examination shows a variable amount of low unilateral abdominal tenderness and muscle spasm.

Bimanual examination reveals a soft cervix with moderate enlargement of the uterus and a mass in one vaginal fornix. This mass is tender but not as markedly so as in pelvic inflammation. The temperature and leukocyte count are normal, or only mildly elevated.

Sigmoid diverticulitis is more apt to be confused with a left-sided pelvic infection in women than with anything else, although the condition is twice as common in men. It usually occurs in the middle-aged, or older, and ordinarily there is a history of bowel disturbance. However, the case with definite abscess formation following the rupture of a diverticulum may be indistinguishable from a left pyosalpinx.

In the upper abdomen the differential diagnosis of acute conditions is especially important and especially difficult. The more or less typical cases of gall-bladder disease, and of perforated peptic ulcers, may be readily recognized but the atypical ones are only too easily confused with one another and with thoracic disease. However, as the acute upper abdominal lesions all demand immediate surgery, I shall not take the time here to discuss their differential diagnosis but hurry on to the lesions above the diaphragm which may so closely simulate them.

Although anginal attacks may be entirely abdominal, the past history added to the paroxysmal nature of the pain and other evidences of circulatory disease will usually establish the diagnosis. Pleurisy, especially when diaphragmatic may, and not rarely does, cause a needless operation. In the absence of positive chest findings, the history and the appearance of the patient are our only helps. Pneumonia may be equally baffling but usually the abnormal thoracic signs and respiratory changes are present. Now, the condition spoken of in the newspapers so often as the cause of death of a prominent person, "Acute Indigestion", is more scientifically recognized as coronary occlusion. This condition with its subsequent cardiac infarction produces symptoms which often are entirely abdominal and of the most distressing nature. Because of this frequent unhappy confusion it seems important to consider here its outstanding characteristics. The past history may, or may not, be positive for evidences of cardiac disease, though frequently there have been anginal attacks. The onset is sudden without warning. There is excruciating pain in the precordium or in the epigastrium, which usually radiates to the shoulders and down one or both arms. The pain is constant, lasting for hours or even days, and relief seems impossible. Dyspnoea then usually develops, followed by nausea and vomiting with associated weakness which may simulate true shock. On examination, one is impressed with the fact that the symptoms seem out of all proportion to the physical findings. The skin is ashen in color, moist, and cold, and the patient has an anxious expression. The lungs may show signs of circulatory failure, the heart may show enlargement and infrequently a pericardial friction rub, but almost invariably the sounds are weak. Irregularities of rhythm at times occur and the electrocardiagram may be of help. The systolic blood pressure is almost invariably lowered. The abdomen may show marked tenderness and muscle spasm in the upper portion and when this is associated with an enlarged liver the similarity to gall-bladder disease is striking. Fever and leukocytosis are constant. So often has coronary occlusion been mistaken for cholelithiasis that an interesting study of the two conditions was carried out in 1924 by Faulkner, Marble, and White in Boston. Studying 30 cases of coronary occlusion confirmed by autopsy and 30 consecutive cases of cholelithiasis confirmed by operation, they noted the following important distinguishing features: In regard to age the youngest patient with coronary disease was forty-two whereas there were 12 patients with gall-stones under this age. Coronary occlusion was four times as frequent in men, while the reverse was true for the other condition. The previous history of anginal attacks was strong presumptive evidence of coronary disease. Radiation of pain to the arms was in favor of the cardiac lesion whereas radiation to the back was more common in the gall-stone cases. Furthermore, the sense of constriction so frequent in the cardiacs was never found in the gall-bladder cases. As mentioned before, the pain in coronary occlusion is constant but in cholelithiasis usually occurs in attacks. Evidence of cardiac failure and the presence of weak heart sounds are very much in favor of coronary occlusion.

Before closing this rambling account, I must at least mention several other conditions that may give symptoms resembling the acute ab-

domen. First in this list comes pyelitis which in the absence of pyuria is often confused with acute appendicitis. The difference in the onset, fever and malaise often preceding the pain, and the development of the symptoms, is usually helpful as is the fact that the pain in pyelitis is usually more lateral and involves the back, and is associated with costo-vertebral angle tenderness. Herpes zoster in the preeruptive stage can usually be recognized by the limitation of the tenderness to a definite nerve distribution. Typhoid fever in the first two weeks can give confusing abdominal signs and the diagnosis depends on the recognition of the underlying disease. Lead colic and tabetic crisis may cause such severe abdominal pain that the characteristic changes in the blood and the lead line in the former, and the altered reflexes in the latter, may be overlooked. The acute intestinal upsets spoken of as ptomaine poisoning, or cholera morbus, cause severe abdominal pain but the history of a dietary indiscretion, the diarrhoea, and the relief of pain produced by pressure and massage of the abdominal wall usually save the patient from a needless operation.

Perhaps the best conclusion that can be drawn from these remarks is that the diagnosis of the Acute Abdomen is full of pitfalls and the best way to avoid them and thus cut down the mounting mortality is for early and close co-operation between internists and surgeons in all doubtful cases.

Correspondence

Interesting Meeting of Virginia Tuberculosis Association.

To Members of the Medical Society of Virginia:

The Virginia Tuberculosis Association will hold its annual meeting on February 28, 1929. As a part of the program of this meeting there will be an open session at 8:00 P. M., in the Parish House of St. Paul's Church, Richmond, Va. The main event of this open session will be an address by Dr. Kendall Emerson, the new Managing Director of the National Tuberculosis Association.

Dr. Emerson is especially distinguished in this particular line of work. He is graduate of Amherst College and the Harvard University Medical School, and for the past several years the chief of the surgical service of Memorial Hospital, Worcester, Mass. Dr. Emerson is a member of the American College of Surgeons. During the World War he served as a major in the Royal Army Medical Corps until America entered the war, when he became a major in the Medical Corps of the U. S. Army. Following the war he was special commissioner of the American Red Cross to Siberia. For three years he was President of the Massachusetts Tuberculosis League.

Dr. Emerson will pay especial attention in his address to the future of surgery in tuberculosis, what must be done in the future in the way of preventing and controlling tuberculosis, and the present status and future functions of sanatoria. I am sure this address will be instructive and of great interest to the medical profession of the state, and am urging all of the members of the Medical Society who are able to do so to try to be in Richmond on this occasion and attend this meeting.

J. Bolling Jones,
President, Medical Society of Virginia.

Roentgenology

Roentgen-Ray Diagnosis

LEOPOLD JACHES, M. D., Radiologist, Mt. Sinai Hospital, New York City.

(*Continued from page* 740)

The Reproductive Organs

In gynecology and obstetrics the roentgen-ray was until recently of comparatively little value in diagnosis. Occasionally a fibroid tumor was discovered by calcification within it, or a dermoid cyst of the ovary by the presence of rudimentary or well formed teeth. Sometimes a fetus can be shown in the early months of pregnancy, as a rule not before the third month. In later months the position of the fetus and the number, in case of twins or triplets, may be learned.

With the introduction of pneumoperitoneum it became possible to demonstrate the pelvic organs, the patient being placed in an extreme Trendelenburg position to allow the gas to fill the pelvis.

In 1919, Rubin began to use the roentgen-ray for the determination of the patency of the fallopian tubes. This is done by injecting into the uterus a gas which escapes into the peritoneal cavity if one or both tubes are patent. Following this, fluoroscopy or roent-

genography is done with the patient in the upright position. If the gas is found under the leaves of the diaphragm, then at least one fallopian tube is patent. It is not possible by this method to say which it is or if both are patent. It has been found safest to use carbon dioxide because it is absorbed most rapidly. This procedure is contraindicated in acute or subacute disease of the adnexa because of the possibility of infection; another contraindication is a degenerated fibroid.

Within the last few years Rubin and others have used injections of iodized oil in the study of the anatomy and function of the uterus and tubes.

Pneumoperitoneum

Most of the special methods used in conjunction with roentgen-ray examinations have been referred to while dealing with the skull, chest, urinary tract and gynecologic conditions. One method, however, that was briefly referred to in connection with eventration of the diaphragm, namely, pneumoperitoneum, ought to be mentioned here, as it is of great aid in properly selected cases for the demonstration of intra-abdominal disease which cannot otherwise be determined. The most important is adhesions between abdominal viscera and the parietes, sometimes between each other. Subphrenic effusions can be better demonstrated in doubtful cases, also irregularities in the outline of the liver, enlargement of the spleen, occasionally kidney tumors, and retroperitoneal masses. As this procedure is fraught with a none too negligible risk to the patient, it should be resorted to only when absolutely necessary and other means of diagnosis have failed.

Conclusions

The foregoing sketch should not be concluded without commenting on the present-day tendency of clinicians to equip their offices not only with fluoroscopes but with complete roentgen-ray diagnostic outfits. The technical work is generally done by the office nurse, who has received her hasty instruction from the manufacturer's salesman; at best, a lay technician who has had a somewhat better training presides over the apparatus. The result in the majority of cases is technically poor films interpreted by roentgenologically ill prepared diagnosticians. While the technical difficulties might be overcome the interpretation of the roentgenograms will continue to have its difficulties, because the clinician has neither the time nor the opportunity to acquire the necessary skill and experience.

The supposed advantage in favor of the clinician is his knowledge of the clinical aspects of the case. This is more than overcome by the natural tendency to favor an interpretation which bolsters up a clinical preconception, and by the unavoidable lack of knowledge of general roentgen-ray pathology with the consequent failure to observe pathologic conditions other than those looked for. As one of many examples, the following case may be cited: A gastro-enterologist who makes his own roentgen-ray diagnosis consulted a roentgenologist as to the nature of a concretion on a film of the urinary tract, but he had overlooked an advanced degree of carcinomatous metastasis in the lumbar spine and pelvis. Similar cases could be cited ad infinitum.

The roentgenologist, on the other hand, has or should have an up-to-date knowledge of roentgen-ray pathology as affecting all parts of the body and all pathologic conditions, and is therefore on the alert for all changes shown on the roentgenogram, whether suspected from the clinical history or not. His lack of familiarity with the patient's history can be overcome by co-operation between him and the clinician.

Serious as the situation is from the standpoint of the patient, who is not apt to obtain the best result to which he is entitled, it is more serious than the standpoint of the development of roentgenology as a diagnostic means. Today, the young man who has the desire to devote himself to roentgen-ray diagnosis is discouraged to find that as a specialist he will be unable to earn his livelihood. As a consequence, many a young physician who would have become a good roentgenologist seeks another medical specialty, and roentgenology is the loser. While the part played by a few clinicians in the development of roentgen-ray diagnosis cannot be denied, it is nevertheless true that most progress in this field has come and must come from those who devote their entire time and energy to it alone.

It is curious that a clinician who would not risk diagnosing the gross lesions found on the operating or the postmortem table will not hesitate to diagnose the shadows such lesions cast on a roentgenogram. Perhaps it can be explained psychologically. In roentgen-ray

diagnosis a photographic plate or film is used, the result is a "picture," and what is easier than looking at a picture? There is hope that the time will come when it will be realized that interpreting the meaning of the shadows seen on the roentgen-ray "picture" requires as much skill and study and experience as the interpretation of the picture seen through a microscope.

We again wish to thank both the author and *The Journal of the American Medical Association* for permission to reprint these articles.

Analyses, Selections, Etc.

"The Common Cold": Etiology, Prevention and Treatment.

Volney S. Cheney, M. D., in a paper on this subject in the *American Journal of Public Health*, January, 1928, first shows statistically the importance of the "common cold." Sickness causes much more loss of time from work than does accidents. The "common cold" and its sequelae, he considers, is responsible for 45 per cent of the loss of time in large industries. It is his opinion that the "common cold" is a disease of civilization, that it is not infectious, but that the cold, or symptoms of the cold, are only a local manifestation of the general systemic disturbance, that all colds are nothing more or less than a manifestation of acidosis.

The author has attempted many times to produce colds by inoculation, but has never been successful. He explains the higher incidence of colds in winter as due to the loss of part of the active effect of the ultra-violet rays of the sun. This loss, he says, is chiefly shown in the calcium content of the blood. The only influence of climatic variations is to limit our activities, cause us to eat too much and exercise too little.

In his experience the highest incidence of the cold occurs on Monday. This, the author attributes to over-eating and over-drinking, especially alcoholic fluids, and fatigue. He gives great importance to fatigue as a contributing factor, and attributes its importance to altered metabolism.

A number of colds were studied by him in the laboratory. The acidity of the urine, the CO_2 combining power of the blood, calcium content of the blood, the sugar content, and non-protein nitrogen and the basal metabolism were studied. He reports that acidity of the urine was always high, the CO_2 combining power of the blood was always low and the sugar content of the blood was always low. These studies lead the author to the opinion that the "common cold" is nothing more than a mild acidosis. He supports this theory by the statement that all colds can be aborted, or cured, by proper alkalinization. Also, that symptoms varying from those of the "common cold" to the severe Flu can be produced by the administration of ammonium and calcium chlorides. The symptoms rapidly disappear upon the administration of sodium bicarbonate.

An Abortive Treatment

If the disease is attacked, he affirms, when there is a beginning dryness in the pharynx or a slight coryza, or congestion of the mucous membrane of the nose, and alkalinization is instituted by large doses of sodium bicarbonate, until the urine is alkaline to litmus paper, a "cold" can always be aborted. Along with the sodium bicarbonate which he generally prescribed 8 in 60 g. doses, accompanied by a large glass of hot water, every 2 hours for 3 doses, he gives to an adult 1 g. of calcidin a calcium and iodine combination every half hour until 6 doses have been taken.

As most colds begin to manifest themselves late in the afternoon or early evening he thinks the abortive treatment is best given at this time up to retiring. At the time of taking the treatment, the usual meal should be dispensed with, or should consist of milk and some cereal, or soup or broth. If the bowels are constipated, a cathartic or laxative should begin, but the lower bowels should be relieved by a soap suds enema. This treatment will abort colds, if taken in their incipiency.

Prophylaxis is best maintained by exercise and a diet which is well balanced and thoroughly adapted to the individual's physical activities, the author says.

Conclusions

This author feels that colds and their sequelae, including rhinitis, pharyngitis, laryngitis, bronchitis, la grippe, influenza, and pneumonia are not infectious, as one generally considers a disease to be infectious, but are due to a disturbance of the alkaline reserve or bal-

ance (acid-base equilibrium). The more severe the degree of disturbance, the more serious the disease.

He thinks conditions capable of producing a milk acidosis or disturbing the "buffer" action of the blood plasma, are contributing factors in producing a cold; a poorly balanced diet, lack of exercise, fatigue, constipation, and infections anywhere in the body. Colds can be prevented by maintaining the alkaline balance through proper diet, exercise, and the careful use of sodium bicarbonate or alkaline waters.

Colds can be aborted by administering sodium bicarbonate in doses large enough to thoroughly alkalinize the system together with small doses of calcidin or iodine calcium.

Colds can be cured by the administration of the same drugs in smaller and frequently repeated doses.

EDITOR'S NOTE:—This abstract is printed not because we agree with the author's statements, that "colds" are not infectious, but because of the approach to the problem of the etiology of "colds" from another angle than infection.

Miscellaneous

Poetical Bacteriology.

In the recent final examination in bacteriology given by Dr. E. C. L. Miller at the Medical College of Virginia, one of the questions gave a list of words and the students were told to write a story in which they should incorporate and underscore the words.

Because of its originality, we are publishing the following which was turned in by one of the students, Mr. John M. Preston:

PASSING OF THE TRIBE OF HIAWATHA.

(*With apologies to Longfellow.*)

By the shores of Gitchegumis,
By the shining deep sea water,
Stood the wigwam of Nicomis—
Daughter of the moon—Nicomis,
And her grandson, Hiawatha.

* * * * * *

Now the lad is grown to manhood,
Versed in all the forest knowledge,
Skilled in all the ways of hunting—
Strongest of his tribe and swiftest.

Learning now the ways of white men,
Learning of the white man's vices
And his disregard of nature,
Were his tribesmen retrogressing.

Then the valiant Hiawatha
Went thru all the forest calling,
Calling all his fellow tribesmen,
Warning them against the white man,
Warning them of sure destruction.

But the warriors would not heed him,
Drank the white man's firewater,
Sold him skins for beads and trinkets,
Learned to love the white man's vices.

Then there came the plague among them,
Pestilence and sickness raging,
Raging thru the leafy forest,
Thru the land of Hiawatha.

Then the warriors sought his council,
Penitent for their abuses,
Glad to do his slightest bidding,
That might cause the plague to slacken,
That might bring relief from suff'ring.

So the noble Hiawatha
Took them to the white man's doctor,
To the white man's lab'ratory,
There to test for black infection
And to fight the plague's destruction.

So the doctor drew some *serum*,
From a guinea-pig, drew serum,
And he called it "*complementum.*"

Next he drew some from a rabbit,
From an immunized rabbit,
Immunized to sheep's red blood cells,
Immunity before developed
By injection of sheep's blood.

From a bottle took some liquid
Which he called an *antigen.*
Mixed these three and incubated,
Incubated thirty minutes.

Added next some Indian serum
Which might hold an *amboceptor*,
Syphilitic amboceptor
Which would make it full fixative,
Giving then a Wassermann
With a "four plus" standard reading.

One brave took an *antitoxin*
To relieve his throat's infection
Caused by streptococcic *toxin*,
Caused by diphtheritic toxins,
For his blood was quite unable
To combat the throat infection;
To *inactivate* the toxins.

Tho' another one had syphilis,
Yet the test was unresponsive,
For his serum wasn't normal;
Caused a complement *fixation*
So the reading was not valid:
Neither tube had *hemolysèd.*

With other ails the white man's doctor
Tried the tests of *flocculation*,
Tried also *agglutination*,
Even tried *precipitation*,
Finding many troubles brewing
In the tribe of Hiawatha.

But the doctor, never tiring
Gave to some a potent *vaccine*,
Gave to some a weakened vaccine;
With attenuated *virus*,
With a slowly acting virus
Building up the *antibodies*.

Then the saddened Hiawatha
Took his braves back to the forest;
To the dense and leafy forests,
To the dark and dreary shadows.
Sad of heart was Hiawatha,
Sad to know his braves were dying.

Glad also, was Hiawatha,
Glad to know the white man's doctor;
Thankful for the plague's arresting,
Thankful for the work of science.

Hiawatha's days were numbered,
And his tribe was weak and scattered.
Old age now had crept upon him
And the burdens of a chieftain
Were too much for him to carry.

Hiawatha left the forest,
Left the shores of Gitchegumis,
Glided thru the purple shadows,
Glided thru the lingering twilight
To the quiet of Nirvana.

Woman's Auxiliary, Medical Society of Virginia

The Woman's Auxiliary to the Post-Graduate Medical Society

Met in Petersburg, January the 8th, with the new president, Mrs. Herbert C. Jones, of Petersburg, in the chair. At this meeting it was reported that seven six months' subscriptions to *Hygeia* had been sent to white schools in Petersburg and one in Hopewell. Other work reported was that sunshine boxes had been sent on Christmas Day to Mrs. C. S. Dodd and to Dr. E. L. McGill.

Mrs. Philip Jacobson and Mrs. Randolph McCutcheon, both of Petersburg, were welcomed as members.

The President asked for ideas about entertaining the nurses of the Petersburg Hospital and there was quite a bit of discussion about organizing a Visiting Nurses' Association. It was stated that Miss Alice Duggan would speak at the next meeting on this subject.

The following were appointed as chairmen of the various committees for 1929:

1. Legislation—Mrs. E. J. Nixon.
2. Hygeia—Mrs. George H. Reese.
3. Hospital Supplies—Mrs. C. T. Jones.
4. Pubilicity—Mrs. Meade Edmunds.
5. Health—Mrs. William F. Drewry.
6. Membership and Courtesy—Mrs. J. Bolling Jones.
7. Entertainment—Mrs. W. B. McIlwaine.
8. Telephone—Mrs. Philip Jacobson.

The County Chairmen appointed for this year are:

Prince George—Mrs. S. E. Gunn, Hopewell.
Dinwiddie—Mrs. G. S. Fultz, Butterworth.
Nottoway—Mrs. J. A. B. Lowry, Crewe.
Brunswick—Mrs. E. R. Turnbull, Lawrenceville.
Greenesville, Mrs. G. M. Naff, North Emporia.
Sussex—Mrs. H. G. Stoneham, Waverly.
Surry—Mrs. F. E. Steere, Claremont.

After the business meeting, Mrs. C. T. Jones and Mrs. W. B. McIlwaine took over the social part of the meeting and served tea and cakes.

The Truth About Medicine

In addition to the articles enumerated in our letter of November 24th, the following have been accepted:

Abbott Laboratories
- Ampules Dextrose, 20 c.c.
- Ampules Dextrose, 50 c.c.
- Tablets Cinchopen—Abbott, 5 grains.

Armour & Co.
- Concentrated Liver Extract—Armour.

Eli Lilly & Co.
- Ephedrine Hydrochloride—Lilly.
  - Pulvules Ephedrine Hydrochloride, ⅜ grain.
  - Pulvules Ephedrine Hydrochloride, ¾ grain.
  - Solution Ephedrine Hydrochloride—Lilly, 3%.

MacDowell Bros.
- MacDowell's Wheat-Nut-Casein Dietetic Flour.

Merck & Co., Inc.
- Bromipin 33 Per cent.

H. K. Mulford Co.
- Pirquet Test for Tuberculosis (Bovine Type).
- Tuberculin Ointment (Moro Ointment) (Bovine Type).
- Tuberculin Intracutaneous (Bovine Type).
- Antivenin (Bothropic).

National Drug Co.
- Diphtheria Antitoxin.
- Normal Horse Serum.
- Pertussis Vaccine.
- Pneumococcus Vaccine.
- Rabies Vaccine—Human (Semple Method).
- Smallpox Vaccine.
- Staphylococcus Vaccine.
- Tetanus Antitoxin (Concentrated).
- Typhoid-Paratyphoid Mixed Vaccine.
- Typhoid Vaccine.
- Antistreptococcic Serum.
- Typhoid-Paratyphoid A Vaccine.

Parke, Davis & Co.
- Scarlet Fever Streptococcus Toxin for Preventive Immunization—P. D. & Co.

E. R. Squibb & Sons
- Sulpharsphenamine—Squibb, 0.9 Gm., Ampoules.
- Tablets Ephedrine Hydrochloride—Squibb, ⅜ grain.
- Tablets Ephedrine Hydrochloride—Squibb, ¾ grain.

NEW AND NON-OFFICIAL REMEDIES.

Syrup Ephedrine Hydrochloride (Double Strength) —Swan-Myers.—It contains ephedrine hydrochloride—Swan-Myers (New and Non-official Remedies, 1928, p. 176), 0.4390 Gm., in 100 c.c. (¼ grain per fluidrachm) and alcohol 12 per cent. Swan-Myers Co., Indianapolis.

Squibb's Mint-Flavored Cod-Liver Oil.—Cod liver oil—Squibb (New and Non-official Remedies, 1928, p. 253), containing 0.67 per cent of oil of spearmint as flavoring. E. R. Squibb & Sons, New York.

Tetanus Antitoxin (Bovine).—A tetanus antitoxin, concentrated (New and Non-official Remedies, 1928, p. 357), derived from the blood serum of cattle immunized against the toxin of B. *tetani*. Marketed in packages of one syringe containing 1,500 units (one immunizing dose). H. K. Mulford Co., Philadelphia.

Capsules Ovarian Substance, Desiccated—P. D. & Co., 5 grains.—Each capsule contains 5 grains of ovarian substance, desiccated—P. D. & Co., (New and Non-official Remedies, 1928, p. 290). Parke, Davis & Co., Detroit.

Tablets Whole Ovary—Lederle, 2½ grains.—Each tablet contains 2½ grains of whole ovary—Lederle (New and Non-official Remedies, 1928, p. 292). Lederle Antitoxin Laboratories, New York.

Rabies Vaccine—Gilliland (Semple Method).—An antirabic vaccine (New and Non-official Remedies, 1928, p. 363) prepared according to the general method of David Semple (phenol killed). Marketed in packages of fourteen syringes each containing 2 c.c. The Gilliland Laboratories, Inc., Marietta, Pa.

Antipneumococcic Serum. Type I.—This antipneumococcus serum (New and Non-official Remedies, 1928, p. 361), is also marketed in packages of one 50 c.c. gravity container. E. R. Squibb & Sons, New York.

Antistreptococcic Serum—Squibb. This antistreptococcus serum (New and Non-official Remedies, 1928, p. 362) is also marketed in packages of one 50 c.c. gravity container. E. R. Squibb & Sons, New York. (Jour. A. M. M., December 8, 1928, p. 1805).

Salyrgan.—Mersalyl.—Sodium {o-[hydroxymercuric-methoxy-propylcarbamyl] phenoxy} acetate.—Salyrgan contains 39.6 per cent of mercury in non-ionizable form. Salyrgan has been demonstrated to exert a destructive action on the spirochæte of syphilis in rabbits, but is used chiefly as a diuretic. It induces diuresis only provided sufficient renal tissue is still intact and is therefore contraindicated in acute diseases of the kidney as well as in advanced nephritis. It is effective in ascites and edema of cardiac and cardiorenal origin; also in ascites resulting from cirrhosis of the liver. Salyrgan is supplied only in the form of a 10 per cent solution in ampules of 1 c.c. and 2 c.c. H. A. Metz Laboratories, Inc., New York.

Bromipin 33 Per Cent.—Brominized Sesame Oil 33 Per Cent—Merck.—A bromine addition product of sesame oil, containing from 31 to 35 per cent of bromine in organic combination. It acts like the inorganic bromides. The combination is not broken up in the stomach; but a portion of the bromine is split off in the intestine; the remaining compound is readily absorbed and largely deposited in the tissues where it is slowly split up. The product is also used as a contrast medium for roentgen diagnosis of the tracheo-bronchial tree. It is stated to be applicable in cases of mild or medium tuberculosis in which the use of an iodized oil is contraindicated. Merck & Co., Inc., Rahway, N. J. (Jour. A. M. A., December 22, 1928, p. 1995).

PROPAGANDA FOR REFORM.

Phenylaminoethanol Sulphate.—The Council on Pharmacy and Chemistry publishes a preliminary report on phenylaminoethanol sulphate, which has recently been synthesized, and studied pharmacologically and clinically and proposed for use as a substitute for ephedrine. The A. M. A. Chemical Laboratory examined a specimen of the product used for the recent clinical work and found it to be a pure substance having the composition claimed. Although the Council will await confirmatory reports before accepting the substance for New and Non-official Remedies, it believes that the results already recorded justify further experimentation clinically. To avoid confusion, the Council has adopted the name "phenylaminoethanol sulphate." (Jour. A. M. A., October 6, 1928, p. 1037).

Irradiation and the Blood.—The enthusiasms that have been aroused by the demonstrable physiologic potency of irradiation with ultraviolet rays generated in various ways call for restraint before they are permitted to promote therapeutic procedures that may presently be discovered to be ill-advised. Not long ago it was shown that the exposure of dogs to carbon arc radiation may give rise to variable results with respect to the changes in the content of erythrocytes in the blood. Depending on the dosage, increases and decreases were noted. A continuation of this work shows that changes in the plasma volume also may take place. The investigators believe that erythrocytes may actually be destroyed by excessive irradiation with massive exposures. Our uncertain knowledge in regard to the effects of irradiation should serve as a warning against undue ventures that may actually border on quackery, until further explicit knowledge is available. (Jour. A. M. A., October 6, 1928, p. 1038).

Liver Treatment in Sprue.—From reports it appears that anemia of sprue in which there is a high color index and fewer than 2,000,000 erythrocytes can be expected to respond to the administration of Minot's liver fraction (Liver Extract No. 343, N. N. R.), with a shower of reticulocytes, unless the bone marrow is hypoplastic. Clinical cure, apparently, follows, but the type of pernicious anemia persists for at least two months after liver extract has been administered. A recent report of a case of sprue treated with Liver Extract No. 343, N. N. R., refers to a patient who was admitted to the hospital in a moribund condition and who has apparently recovered completely. (Jour. A. M. A., October 6, 1928, p. 1038).

The Precursor of Vitamin D: Ergosterol.—Following the discovery that foods may be made antirachitic by irradiation with untraviolet light, it was shown that the substance which is activated by the rays is ergosterol. A precursor to Vitamin D had thus become established. Activated ergosterol was shown to be a hundred thousand times as effective from the standpoint of its effects on rachitic animals, as cod liver oil. This irradiated ergosterol needs careful standardization and evaluation in terms of curative potency, because an excessive dose may cause "hypermineralization" in the blood in the normal as well as the rachitic infant. The usual dose in infants for cure thus far has been given in the form of oil solutions containing the equivalent of from 2.5 to 5 mg. of irradiated ergosterol. Evidence has been presented which strengthens the assumption that only a molecular structure such as that possessed by ergosterol enables a sterol to be photo-chemically converted into Vitamin D, and confirms the view that ergosterol is the specific parent substance of Vitamin D. Fortunately, there

need be no limitations to its availability for therapeutic use if this is finally established on a sound basis. (Jour. A. M. A., October 13, 1928, p. 1110).

Cleaning the "Dental Augean Stables."—For years the dental profession, as the medical profession before it, has had its share of "peddlers" of worthless nostrums and quack remedies. Therefore the recent action of the American Dental Association, pointing toward the establishment of a bureau of chemistry for the examination of dental drugs is noted with satisfaction. The American Dental Association will render a public service by exposing many of the worthless "dentrifices," "mouthwashes," "pyorrhea remedies" and what not purveyed to the public. Equally important and a more fertile field for activity are the so-called ethical remedies. The American Dental Association proposes the establishment of its own council on pharmacy and chemistry. Congratulations to dentistry in its campaign to clear the "Augean stables" of dental materia medica. (Jour. A. M. A., October 13, 1928, p. 1113)

Benzyl Alcohol as a Local Anesthetic.—Benzyl alcohol is probably not needed as a local anesthetic, in view of the superior anesthetic qualities of other bodies. It is relatively more irritating and its action of shorter duration than that of non-volatile agents. (Jour. A. M. A., October 13, 1928, p. 1131).

Ovarialhormon Folliculin Menformon.—The Council on Pharmacy and Chemistry reports that an ovarian preparation made on the basis of the work of Laqueur, is marketed as Ovarialhormon Folliculin Menformon by two European firms and the product of one of these is marketed in the United States by the Marvell Pharmacal Co., New York. According to the information received, the commercial product may be obtained (a) from the placenta of women and animals, (b) from the liquor folliculi of cattle and (c) from the urine of pregnant women. Laqueur states that Menformon may be obtained from the urine and testes of men. The methods which were given the Council were so general in character that they could not be taken as establishing the character or identity of Ovarialhormon Folliculin Menformon. The Council reports that it was unable to obtain evidence of the efficiency of the preparation in the strength in which it is marketed. The Council has postponed consideration of the acceptance of this product for New and Non-official Remedies to await confirmative evidence for its therapeutic value and more definite information with regard to the identity of the product. (Jour. A. M. A., October 20, 1928, p. 1193).

Ovarian Hormones and Ovarian Organotherapy.—The evidence from the experimental laboratories and the clinics, accumulated especially during the last few decades, points to the conclusion that the mammalian ovaries exercise their influence on the so-called secondary sex characters and the sex life of the mammalian female through the mechanism of the hormone or hormones produced by some element in the ovary. It is therefore rational to treat or attempt to treat symptoms due or presumably due to ovarian insufficiency by substitution therapy. Summing up the extensive clinical trials with ovarian preparations, generally administered orally, Novak, in 1924, stated that the results are rarely striking and often nil to the level-headed observer. Much work has been done on the separation and concentration of the so-called follicular ovarian hormone and preparations have been obtained which, when administered parenterally, are reliably reported to stimulate uterine growth and to introduce changes similar to estrus in spayed animals. To date the use of such preparations on patients has been neither extensive nor encouraging. The various ovarian hormone preparations that now seem sufficiently purified to be introduced hypodermically without serious results to the patients should be given trial in definitely uncomplicated ovarian deficiency in order that more may be learned as to their actual effects. (Jour. A. M. A., October 20, 1928, p. 1194).

Mu-Sol-Dent.—This is marketed by the V. B. Corporation of Pittsburgh, Pa., as "the only existing non-irritating efficient solvent of mucin and mucus." It is said to be "efficient in the prevention and treatment of sore throat and colds" and a product that will greatly hasten the healing of wounds and burns. Especially it is recommended for the removal of mucin plaques and film on teeth. The national organization of dentists has recently turned its attention to the problem of giving its members and the public the facts regarding widely advertised medicinal preparations in the dental field and the first preparation analyzed by its chemist (working in the A. M. A. Chemical Laboratory) is Mu-Sol-Dent. It was found to be essentially a solution of common salt, potassium chloride and trisodium phosphate in water. There is present also essential oils and coloring matter. And this is the preparation that is said to prevent tooth decay, tartar and pyorrhea, and to be good for catarrh, hay-fever and sore throat. (Jour. A. M. A., October 20, 1928, p. 1211).

Book Announcements

Pediatrics For the General Practitioner. By HARRY MONROE McCLANAHAN, M. D., Professor of Pediatrics Emeritus, University of Nebraska, Ex-President of the Nebraska State Medical Association, etc. Philadelphia and London. J. B. Lippincott Company. 1929. Octavo of 606 pages with 230 illustrations. Cloth. Price $6.00.

Thyroxine. By EDWARD C. KENDALL, M. S., Ph.D., D. Sc., The Mayo Foundation, Rochester, Minn. AMERICAN CHEMICAL SOCIETY, MONOGRAPH SERIES. Book Department, The Chemical Catalog Company, Inc., 419 Fourth Avenue, at 29th Street, New York, U. S. A. 1929. Octavo of 265 pages. Illustrated. Cloth. Price $5.50.

Medical Blue Book of Wisconsin. 1929. Copyright 1929 by State Medical Society of Wisconsin. J. G. CROWNHART, Secretary. 96 pages, cloth. Free to members of that Society; otherwise $10.00. The information includes the more important rules and regulations affecting physicians in their practice and much information of interest to physicians, and is published by the Society for the benefit of its members.

A Comparative Study of World War Casualties From Gas and Other Weapons. By COL. HARRY L. GILCHRIST, MEDICAL CORPS, U. S. ARMY; Chief, Medical Division, Chemical Warfare Service. Chemical Warfare School, Edgewood Arsenal, Maryland. 1928. Octavo of 51 pages. Illustrated.

Betterment of Life Insurance Service. Proceedings of the Twenty-Second Annual Convention of The Association of Life Insurance Presidents, held in the Hotel Astor, New York, N. Y., December 13 and 14, 1928. Octavo of 280 pages. Paper.

Forty-First Annual Report of the Bureau of American Ethnology. To the Secretary of the Smithsonian Institution. 1919-1924. United States Government Printing Office, Washington, 1928. Quarto of 626 pages. Illustrated.

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Editorial

Considerations in Pleurisy.

Attention to and thought of the pleura enters largely into the day's work of the practitioner at this time of the year. Infections of the respiratory tract lead to involvement of the pleura. At this season, respiratory infections are prevalent. The complications of such infections are frequently found in pleural invasions. Pleurisy may stealthily put in symptoms that are not easily recognized in the presence of the grosser symptoms of pulmonary disease, such as cough and expectoration. Mildly, the "stitch in the side" may at first insinuate itself into the list of the clinical symptoms, and only a careful physical examination by auscultation may enable the examiner to recognize the presence of pleurisy. But this complication or secondary infection is more frequently in incidence than clinical recognition of it leads one to think of in pleural pathology.

Pain about the chest must be evaluated. Clinicians cannot afford to put off investigation of the nature and cause of pain about the chest. Pain about the abdomen has already attained that degree of importance in the mind of the laymen that ensures a careful examination for fear of appendicitis or some other abdominal disease, but pains about the chest are discounted in the lay mind, and, sometimes in the medical mind, by "passing it up" as some "muscular pain" or "intercostal neuralgia". Severe pain might demand consideration, but sensations resembling muscular pain or trivial pain, often an index of pleuritis in its incipiency, does not receive careful investigation. In this way precautions are not begun that might abort or shorten an attack of pleurisy in its several stages of pathology. One should be alert to follow the lead of pain. After the enigmatic action of a respiratory infection is explained and veiled pathology is brought to light by the exhibition of pain about the chest, unsuspected even pleural exudate may be found.

Pleural localization of infection may be exposed, not before proven as a part of a delayed convalescence. Pain may bring to light unsuspected constitutional diseases. Tuberculosis and focal infections may be suggested that had not hitherto been thought of.

Respiration is another symptom of interest in pleurisy. The rate and rhythm have a real significance in pleuritic complications. The rate and depth of respiration will be influenced by the position and degree of pleuritis. It is also influenced by the presence and amount of exudate in the pleural sac. The cyclic respiratory attacks bring new and interesting possibilities in pleural effusion and exudate. Clinicians watch with keen interest the position of the patient in bed or during examination, especally with pain in the chest regions. The rate of respiration associated with pain and the primary factors of the respiratory tract all challenge the acumen of the examiner in the domain of physical examination. In the stage of dry pleurisy respiration may "cut off" and the position assumed by the patient may suggest pleurises.

An inflammation of the pluera may eventuate in the producion of an exudate. The exudate may be serous, serofibrous, seropurulent or hemorrhagic. Such a division of the forms of exudate are arbitrary but useful as a clinical description of the predominating elements in the exudate; whether serofibrous, blood or pus. The remarkable fact about the nature of the exudate is that the effusion is not typical of the germ or infecting microorganism. The exudate of pleurisy in tuberculosis, for instance, may be fibrinous, serous, hemorrhagic or purulent; and, also, pneumococcus pleurisy may terminate in fibrinous, serofibrinous or purulent exudate. Cancer may show the same characteristics. But it is felt by practitioners that a large percentage of serofibrinous effusion from pleurisy is tuberculous. Pneumococcus pleurisy tends more often to become purulent in the terminal stages.

The symptoms of pleurisy with effusion are quite definite. Practitioners, attendant upon pneumococcus infections of the respiratory tract at this time, may wisely be on the lookout for them. Preceded by pains in the chest, fatigue and loss of strength, the patient complains of "difficult breathing"; cyanosis may be present. Pain may be absent but sweating, weakness, rapid shallow breathing will be grouped together. Physical signs are indicated by the suggestive position of the patient, lying upon the affected side, in order to give free play to the unaffected side. One notes the less mobile chest wall, with less concave interspaces or with bulging interspaces on the affected side. The apex beat on the left side may be displaced. Percussion brings out the presence of effusion. This method while requiring certain skill, offers the examiner an excellent means of physical examination, but must be considered with the findings of auscultation. In fat persons, loud and forceful percussion may be required, but the light stroke is more useful in outlining the fluid level and in marking out small collections of fluid. Exploratory puncture also affords a method of direct diagnosis of effusion. It not only discloses absence or presence of fluid but its nature and bacteriological significance. This may be not absolutely reliable under certain conditions of error or technique, but is a most useful method when properly used.

Untoward effects in thoracentesis may be noted in this connection. Serious complications, sudden in nature, may attend this procedure, while it may be performed many, many times without untoward results. At the end of aspiration one may look for unfavorable action, sometimes some hours afterward. Coughing or great pain are signals of distress and the needle should be withdrawn temporarily at least if these symptoms persist after partial withdrawal has failed to relieve them. Faintness is not uncommon and so patients should be tapped in a semi-recumbent and supported position. Pleural shock associated with a sort of faintness calls for immediate suspension of thoracentesis. Hemorrhage may occur as an accident by cutting through the intercostal artery. Patients have been known to bleed to death in a few hours from an undiscovered hemorrhage into the pleural sac, attendant upon a diagnostic puncture of the pleura. Collapse of a patient with pleural effusion in a few seconds after puncture of the pleura has been noted by clinicians.

Empyema may be commented upon as purulent effusion in pleurisy. The purulency of the exudate usually follows a seropurulent one. Pneumococcus and streptococcus infections predominate in empyema, but staphylococcus and mixed infections are found. Tuberculous pleurisy with effusion, not infrequently from dual infections, may become purulent. Lobar pneumonia and influenzal pneumonia are not infrequently associated with pleurisy which may terminate in effusion of a purulent nature.

But practitioners have to deal with complications of respiratory infections in the pleura that are not as easily diagnosed as the common lateral pleurisy with or without effusion. A peculiar localization of the pleuritic inflammation with its exudate may render its discovery a bit more difficult and uncertain by reason of certain conditions. One should always keep in mind the atypical type of pleurisy known as diaphragmatic pleurisy and it should not be considered a rare type. The play of the pain is rather deceptive. The pain may be referred to the abdomen. The upper quadrant of the abdomen, the dorsal region and even the lower zone of the abdomen may be the position of the referred pain. Differential diagnosis of pain in these regions is not easy to make and one must weigh carefully evidence from the physical examination as well as the laboratory in reaching an opinion.

Interlobular pleurisy is another chance of pleurisy with or without effusion. Encapsulation of pleural exudate between lobes and between the lower lobes and the diaphragm may be detected by percussion or puncture or by X-ray examination. Mediastinal pleurisy, pericardial pleurisy, subphrenic pleurisy with encapsulated exudate, give separate pictures in symptoms and signs and may be before the examiner's mind as the diagnosis is sought in obscure chest cases involving respiratory infections.

References.

Oxford Medicine, Vol. II, Chap. V.

Hemoptysis

The common causes of coughing up blood are pulmonary tuberculosis and pulmonary infarction; but bronchiectasis, aortic aneurysm, syphilis of the lungs, heart and blood disease

may be less common causes. The diagnostic significance is sometimes difficult and, unless the amount of blood involved is considerable and repeated, is not infrequently unsolved. But it is a feature of respiratory infection which requires the careful consideration of the practitioner and should not be lightly dealt with in treating patients.

Pulmonary Embolus

In heart disease one may not be surprised by the exhibition of the sudden, grave and immediate pulmonary embolus. The original site from which may be launched the embolus may be difficult to designate. The pulmonary embolus arises from factors in the right heart and venous side of the circulation most frequently. The causes are numerous and not always known. In heart disease with failing compensation with the right heart dilated and with venous pressure high, clots may set off into the circulation of the pulmonary route. In infectious diseases, in phlebitis in childbirth, in certain blood diseases, in pleural infectons, in operations on the legs, and in the pelvis, emboli may form. In coronary thrombus, in recent months, a series of thrombi have been noted and finally pulmonary thrombus was the sudden cause of the death of the patient. The symptoms depend on the size and localization. If there be occlusion of the trunk of the pulmonary artery or both main branches, death is sudden and immediate. A patient with a sudden seizure of dyspnea, a sudden struggling for breath, pallor and cyanosis, a gasp and unconsciousness with failing pulse and respiration, may present the striking signs of an occlusion of the pulmonary artery by embolism. A varying array of signs may appear, according to whether the embolus possesses main branches and lodges in larger subdivions: a more prolonged display of pulmonary signs may be observed. With the recurrence of influenza with its complications in patients with heart disease, one may think of pulmonary embolus as a possible complication.

News Notes

The Tri-State Medical Association of the Carolinas and Virginia

Will have its thirty-first annual meeting in Greensboro, N. C., February 19, 20 and 21, with headquarters at the O'Henry Hotel. Dr. James K. Hall, Richmond, Va., is president, and has arranged for an excellent program. A special feature will be the clinics which will be on diseases of children by Dr. Edward A. Park, of Johns Hopkins Hospital, Baltimore; an allergy clinic by Dr. Warren T. Vaughan, Richmond; a clinic in general medicine by Dr. Thomas McCrae, of Jefferson Medical College, Philadelphia; one on skin diseases by Dr. A. Benson Cannon, of the Medical Department of Columbia University; and another in nervous and mental diseases by Dr. Michael P. Lonergan, chief psychiatrist of the State Hospital on Ward's Island, New York. Patients for this latter clinic will be furnished by the State Hospital at Raleigh.

The program for Tuesday evening, February the 19th, has been prepared especially for the public and will be held in the auditorium of the North Carolina College for Women and will be broadcast by radio. At this session, a gavel made of timber from "Belroi", the ancestral home of Dr. Walter Reed in Gloucester County, Va., will be presented to the Association by Dr. J. Allison Hodges, of Richmond, and will be accepted by Dr. Stuart McGuire, Richmond, on behalf of the Association. Dr. James K. Hall will present his presidential address this evening and addresses will be made by Dr. Winfred Overholser, Boston, Mass., (invited guest) on "The Psychiatrist in Court", Dr. Joseph L. Miller, Thomas, W. Va., (invited guest) on "Has Medical History Any Value?", and by Dr. Charles O'H. Laughinghouse, Health Officer of North Carolina.

The Wednesday evening program will be more highly technical and will include papers by Dr. Wm. deB. MacNider, of Chapel Hill, N. C., and the following invited guests: Dr. Thomas McCrae, Philadelphia; Dr. A. Benson Cannon, New York; Dr. John A. J. Kolmer, Philadelphia; Dr. Edwards A. Park, Baltimore; and Dr. Walter E. Lee, Philadelphia.

This is a meeting that members cannot afford to miss and should so arouse the interest of non-members that they will wish to join and attend. To repeat—the dates are February 19, 20, and 21; the place—Greensboro, N. C.

Tuberculosis Meeting to be Held in Richmond.

The annual meeting of the Virginia Tuberculosis Association will be held February 28th,

at St. Paul's Parish House, Richmond, under the presidency of Dr. William F. Drewry, of Petersburg. At the morning session, beginning at 9:30, there will be a discussion of local tuberculosis programs, led by Dr. Kendall Emerson, Managing Director of the National Tuberculosis Association, followed by talks on case finding, sanatorium treatment, home care, educational campaigns, newspaper publicity, lectures and the use of health literature.

Dr. Basil B. Jones, well known Richmond pediatrician, will lead a discussion on Tuberculosis in Childhood.

Following this morning session the meeting will adjourn for luncheon, to convene again at 3 P. M. for a business meeting of the Association, election of directors and officers, adoption of program and budget, etc.

Dr. Kendall Emerson, of New York, will make an address at 8 P. M. in the auditorium of St. Paul's Parish House. This will be a short meeting to which all physicians are particularly invited. He will discuss matters of great interest to doctors, touching on the present sanatorium situation, and the future functions of sanatoria; the future of surgical work in tuberculosis (Dr. Emerson is himself a well known surgeon); and a brief summary of the findings of the Medical Research Committee.

The Corner Stone of Puericulture.

The Division Superintendents at their annual meeting in Richmond during Thanksgiving week adopted a resolution that may prove to be epoch-marking in its results.

By this resolution the Superintendents' Association sets a corner stone for the monumental work at which the State Department of Health has been striving through its co-operation with the school in behalf of the physico-mental fitness of the child.

Where school and home join hands through the beneficial intervention of the family physician, puericulture dawns and racial health begins.

We take pleasure in bringing the resolution passed by the Superintendents' Association before the Medical Society of Virginia, through the courtesy of the VIRGINIA MEDICAL MONTHLY.

RESOLUTION.

We, the Health Committee of the Division Superintendents' Association having been notified of the appointment of a Child Welfare Committee by the State Medical Society to advise the State Department of Health in its Child Health Program, do hereby express our gratification and suggest that the Superintendents pass the following resolution:

WHEREAS, we, the Division Superintendents of the State, having long realized that our efforts to educate the children of the Commonwealth, are sorely minimized and handicapped by the physical unfitness of the children we have to teach; and

WHEREAS, we understand that many of these defects that handicap the children in getting their education are largely preventable,

THEREFORE, we, the Division Superintendents' Association of Virginia Schools, do respectfully request the Medical Society of Virginia to undertake the study of the best means of preventing or correcting the bodily defects of school children, with the ultimate aim of sending us physically fit children to teach, reaching at least the present minimum standard adopted by the State Departments of Education and Health—the Five Point standard.

SUPERINTENDENTS' HEALTH COMMITTEE.
(Signed)
C. B. GREEN, *Chairman*, Mecklenburg County.
A. S. GREEVER, Tazewell County.
R. M. NEWTON, Elizabeth City County.
T. B. GAYLE, Stafford-King George Counties.
L. F. SHELBURNE, City of Staunton.

Award for Outstanding Scientific Achievement.

For his work in an investigation of the ductless glands and particularly in his isolation of pituitary hormones, Dr. Oliver Kamm, director of chemical research of Parke, Davis & Company, manufacturing chemists, was awarded the $1000 prize by the American Association for the Advancement of Science, on January the 2nd, for the "most noteworthy contribution to science presented at the annual meeting," in New York. Some 2,000 scientists delivered addresses at this time.

After twelve years' work in the Parke, Davis & Company Laboratories, Dr. Kamm isolated two hormones—the alpha and beta—from the posterior lobe of the pituitary gland, which is held by chemical scientists to be equal in importance to the isolation of insulin and the discovery of adrenalin.

The alpha hormone is the so-called oxytocic principle. The beta hormone is the blood-pressure-raising principle. Dr. Kamm also showed definitely that the beta hormone has the power of controlling the excessive output of water. It does not act upon the kidneys, but controls the utilization of water by the individual tissues of the body. The usefulness of this beta hormone is now under investigation in diseases characterized by excessive loss of water, such as diabetes insipidus, burns, cholera, other infectious diseases, and surgical shock.

Dr. Kamm says that, "Water-intoxication, with its alarming symptoms leading even to unconsciousness, is very rare. The other ex-

treme, that of water-poverty, is rather more common, and is characterized by extreme thirst and excessive elimination of water. This condition, known clinically as diabetes insipidus, is relieved at least temporarily by pituitary extract, and it has just been found that the beta hormone possesses this remarkable action."

It is stated that only a very few grams of highly purified alpha and beta hormones are as yet available, and these are known commercially as pitocin and pitressin, respectively. Although the Parke, Davis Research Laboratories use the methods of micro-analysis, a single laboratory experiment requires the pituitary glands of 50,000 cattle.

Importance of Undulant Fever Being More Widely Recognized.

Undulant fever, a disease contracted from cattle and hogs which are infected with contagious abortion, is being more widely recognized as a problem of considerable importance from a public health standpoint, as persons who drink raw milk from infected cattle or who handle hogs or cattle that are infected are likely to contract the disease. A number of cases of this disease have been reported from various States.

The name, "undulant fever", is applied to the disease because the attacks of fever come in waves or undulations. The disease was first recognized on the island of Malta in the Mediterranean, and it was thought for a time that it was spread only through the milk of goats, but it is now known that the disease may be contracted from cattle and hogs. The disease is not only disabling but extremely chronic in duration as the patient may be ill for two or three years before any improvement is noted.

As many cases are contracted from infected milk, the chief precautions are the use of pasteurized milk and care when coming in contact with animals known or suspected to be infected with contagious abortion. In a series of cases of undulant fever recently studied among adults living on a farm there were thirty-nine males and six females; six of the male cases are known to have derived their infection from hogs.

Dr. C. M. Miller in the Year Book

The Practical Medicine Series, comprising eight volumes on the year's progress in Medicine and Surgery, under the general editorial charge of Dr. Charles L. Mix, and published by the Year Book Publishers, Chicago, affords one an excellent means of making a practical survey of the medical and surgical progress. In the Volume, Eye, Ear and Throat, local interest is found in the fact that the introduction to the "The Eye" department, presenting "The Relation of the Ophthalmologist to the General Medical Profession" is by Dr. Clifton M. Miller, of Richmond, Va. Dr. Miller in this chapter recites the historical development of the eye specialist and points out important relationships in medical practice that must be maintained between the physician and specialist if the best interest of the patient is to be attained; further, that the specialist should sustain an active interest and inquiry into the collateral branches of medicine, particularly physiology and pathology.

The Annual Congress on Medical Education, Medical Licensure and Hospitals

Is to be held at the Palmer House, Chicago, Ill., February 18, 19, and 20, and all members of the profession interested in these subjects are invited to attend. Dr. Ray Lyman Wilbur, of Stanford University, Calif., is chairman of the Council on Medical Education and Hospitals, and Dr. Guy L. Connor, Detroit, Mich., is president of the Federation of State Medical Boards of the United States.

At this meeting the Federation of State Medical Boards hopes to develop a plan of national scope by which it may secure satisfactory general enforcement of medical practice acts and other health-protective measures. For this purpose, the Federation appeals for attendance and co-operation of the secretary and executive officer of every state medical association and of every state board of health in the United States.

If 250 attend these conferences from points outside of Chicago, return tickets may be had for one and a half rate on the certificate plan.

Dr. Thomas P. Haslam,

Associate in the Department of Pathology, Medical College of Virginia, in 1927-28, has returned to Texas and is now director of the Baylor Out-Patient Clinic at Dallas, Texas.

Noted Among Bank Directors.

The following are some of the Virginia doctors whose names have been noted as bank directors in recent reports from many sections of the State: Dr. W. O. Smith, Altavista; Dr. R. E. Booker, Lottsburg; Dr. R. D. Garcin, Richmond; Dr. W. W. Wilkinson, LaCrosse;

Dr. A. T. Hart, South Hill; Dr. A. W. Lewis, Aylett; Dr. William E. Croxton, West Point; Dr. U. H. Johnson, Barhamsville; Dr. J. M. Shackelford, Martinsville; Dr. B. L. Carter, Blue Spring Run; Dr. B. R. Hudnall, Covington; Dr. John M. Williams, Petersburg; Dr. C. S. Dodd, Petersburg; Dr. M. P. Rucker, Bedford; Dr. S. B. Moore, Alexandria; and Dr. O. A. Ryder, Alexandria.

Dr. R. T. Givens,

Of Glen Wilton, Va., is spending some time at New Castle, Va., so as to be with his father who is in failing health.

Dr. T. J. Stanley,

Beaver Dam, Va., who suffered a stroke of paralysis in December, is now reported as being much improved.

Dr. and Mrs. Henry Clay Smith,

Williamson, W. Va., former residents of Virginia, recently visited relatives in Roanoke, Va.

Cuba Holds a National Child-Welfare Congress.

In December, Cuba held its first National Congress of Child Welfare, organized by the University Pedagogical Association. This action was inspired by the Fifth Pan-American Child Congress held in Habana a year ago. The executive committee includes leading physicians, educators, and lawyers. There were official delegations from the provinces and cities. Many interesting reports were presented.

Dr. Tom A. Williams,

Formerly of Washington, D. C., has moved to Rome, Italy, where he is pursuing researches in Mediaeval Pathology. He continues the practice of Neurology and Psychiatry among American and English people, with offices at 47 Via Lombardia.

Dr. Homer S. Henkel,

Staunton, Va., after an illness of several months, went to Johns Hopkins Hospital, Baltimore, for treatment, early in January.

Special Course at University of Bordeaux.

There will be a special post-graduate intensive course in surgery of the ear, nose and throat, trans-maxillary and plastic surgery, bronchoscopy, etc., under Prof. Georges Portmann at the University of Bordeaux, France, this summer. It is stated that the course will begin July 22nd and last for five weeks and will be limited to twelve students. Information about this may be obtained of Dr. Leon Felderman, 4428 York Road, Philadelphia, Pa.

Dr. Richard Cannon Eley,

Of the class of '25, University of Virginia, Department of Medicine, is at present an assistant in pediatrics at the Harvard University Medical School, his appointment having become effective September 1st, last.

Appointments with Parke, Davis & Company.

Dr. A. William Lescohier has been appointed general manager of Parke, Davis & Company, large manufacturers of pharmaceutical and biological products, with home offices and laboratories in Detroit, Mich., and branch laboratories in a number of foreign countries. Dr. Lescohier has been connected with this company for the past twenty years. He is a graduate in medicine and a fellow of the American Medical Association. After graduation in 1909, he entered the Company's service as a member of its scientific research staff; in 1918 he was placed in charge of the production of serums, vaccines, antitoxins and other biological products; in 1925 he became director of the Department of Experimental Medicine, and has most recently occupied the position of assistant to the president.

Parke, Davis & Company also announces the appointment of Dr. Louis Klein as Promotion Manager and Mr. Ralph G. Sickels as Advertising Manager. Both men have been connected with the Company for a number of years, Dr. Klein as manager of the department of medical service, and Mr. Sickels as a member of the advertising staff.

The American Association for the Study of Goiter

Will hold its annual meeting at Dayton, Ohio, on March 25, 26 and 27, under the presidency of Dr. S. D. Van Meter, of Denver, Col. The primary object of this association is to bring together each year men who are especially interested in the study of goiter and its associated problems. Members of state and provincial medical societies are eligible and cordially invited to participate as attending members.

The first day of the Dayton meeting will be given over to diagnostic clinics in the morning and several short papers during the afternoon, chiefly concerned with recent experimental work. On the second day, operative clinics will be held at the Miami Valley Hospital, St. Elizabeth's Hospital and at the Soldiers' Home

Hospital. The afternoon of the second day and the morning and afternoon of the third day will be given over to the presentation and discussion of scientific papers.

The headquarters will be at the Hotel Miami. Dr. William A. Ewing is President of the Montgomery County Medical Society under whose auspices the meeting is to be held. Dr. E. M. Huston is the General Chairman of the Committee on Arrangements. Dr. H. C. Haning is Chairman of the Hotel Committee. All communications in regard to hotel reservations should be addressed to Dr. Haning at the Reibold Building, Dayton, Ohio.

Food Adulteration Decreases.

Considering the enormous increase in the volume of manufactured foods during the last 20 years, officials of the Food, Drug and Insecticide Administration of the U. S. Department of Agriculture, in a recent report, state that the proportion found adulterated today is very small. Federal and State food officials are constantly on the alert, however, to restrain that small portion of manufacturers who will still take the chance to jeopardize the health of consumers, by adulterating food products, whether the adulteration results from carelessness of from deliberate intent. As the result of effective enforcement of Federal and State food laws during the period named, the food products sold on the market today are freer from adulteration and misbranding than ever before.

One matter to engage the attention of the officials in the near future is to effect suitable changes in the formulas for the various preparations on the market labeled for the treatment of malaria which do not contain adequate quantities of the cinchona alkaloids to meet the requirements for the treatment of the dissease. Changes in the labeling will also be insisted upon where the claims made are unwarranted by the composition of the preparation.

The Tri-State Medical Society of Kentucky, Ohio and West Virginia

Held its quarterly meeting in Huntington, W. Va., January 24, under the presidency of Dr. William R. Laird, of Montgomery, W. Va. In the absence of the president, however, Dr. R. K. Buford, of Charleston, W. Va., presided. There was a large attendance and interesting papers were read by Dr. Russell Cecil, of New York; Dr. Ralph Lloyd, of Brooklyn; and Dr. Andrews, of Cincinnati. Dr. E. Leo Berger, of Brooklyn, and Dr. Louis E. Phaneuf, of Boston, invited guests, were prevented by illness from attending and taking part in the program.

On Committees of Kiwanis Club.

Drs. I. K. Briggs, R. H. Fuller and George A. Stover have been named as members of committees of the Kiwanis Club of South Boston, Va.

China's National Child-Welfare Association.

The National Child-Welfare Association of China was recently formed under the direction of Dr. Kung, Minister of Industry, Commerce, and Labor, with headquarters at Shanghai. This new organization is an outgrowth of the Canton child-welfare committee, in which many high officials and merchants and their wives have taken a keen interest. It will cooperate with the Association for the Welfare of the Children of China (inc.), which has its headquarters in New York City. The aim of the association is to improve the living conditions of poor and homeless children "according to the spirit of the Golden Rule."

Dr. Stuart O. Foster,

Roanoke, Va., is spending sometime studying in the various hospitals in Boston, New Haven and New York, preparatory to specializing in internal medicine in Roanoke. For the past two months he has been studying diabetes under Dr. E. P. Joslin, of Boston.

Officers of Hospital Staff.

At a meeting held early in January, Dr. Mason Roamine was elected chairman of the Petersburg Hospital, Petersburg, Va. Other officers chosen for this year are: Dr. George H. Reese, vice-chairman; Dr. C. W. Lynn, secretary; Dr. Philip Jacobson, vice-secretary. Dr. Romaine succeeds Dr. E. L. McGill as chairman. Dr. L. S. Early was nominated for membership on the board of directors.

Dr. and Mrs. J. Bolling Vaiden,

Recently of Highland Springs, Va., have moved to Lawrenceville, Va., where Dr. Vaiden is continuing the practice of his profession.

Dr. W. L. Early,

Wolftown, Va., was recently in a hospital at Miami, Fla., for injuries received in an automobile accident. He had gone to Florida to recuperate from injuries received in an accident when the second one occurred.

Capital Investment in Medicine.

As a part of the work of the Committee on

the Cost of Medical Care, the American Medical Association has sent out questionnaires to 25,000 physicians, selected at random, to secure data pertaining to the invested capital involved in physicians' education, intern training, post-graduate courses, office and travelling equipment, office maintenance, medical society affiliations, library maintenance and medical licensure fees. The questionnaire is anonymous and there need be no fear of embarrassing results from the information obtained.

The object of this item is to suggest the importance of this survey and to ask any of our readers who have received this questionnaire to give their cooperation by answering and returning the questionnaire as soon as possible.

Dr. and Mrs. H. D. Howe,

Hampton, Va., left the latter part of January for New York, from which place they were going with some friends for a Mediterranean cruise.

Founder's Day at Medical College of Virginia.

Founder's Day of the ninety-first session of the Medical College of Virginia, Richmond, will be observed at Monumental Church, this city, on February the 15th, beginning at 10:30 A. M. The academic procession, including the board of visitors, invited guests, faculty and students, will be formed at McGuire Hall, 12th and Clay Streets, at 10:10 o'clock. Dr. Joseph L. Miller, Thomas, W. Va., medical historian and bibliophile, will speak on "Physicians of the Old South, Their Character and Education," and Dr. Charles R. Robins, Richmond, will speak on "Beginnings in Nursing Education under Sadie Heath Cabaniss in the Old Dominion Hospital." Following these exercises, Cabaniss Hall will be open to the public from 11:30 to 12:30 o'clock.

North Carolina to Have Health Examination Campaign.

According to the *Illinois Health Messenger*, the North Carolina State Board of Health has created a division in its organization whose functions will be to promote the habit of periodic health examinations. The public will be advised to go regularly to their family physicians for this purpose. The unit will be made up of one doctor and one nurse and the program includes demonstrations for doctors in making the examinations on the one hand, and of promoting the idea of health examinations through lectures to various organizations, such as parent-teacher associations, civic clubs, colleges, ministerial associations and through popular literature and newspapers on the other hand.

Dr. Charles Behney,

Of Philadelphia, associate in the department of gynecology, University of Pennsylvania Hospital, and his wife, recently visited relatives and friends in Lynchburg, Va.

The Venereal Disease Menace.

If your attention has not been called to these charts 9 by 12 inches, you may be interested in knowing that a set of fifty may be purchased from the Superintendent of Documents, Government Printing Office, for $1.00.

This is an exhibit for adults and was prepared by the United States Public Health Service for use in its Co-operative Work with the State Departments of Health. These posters are an extremely valuable aid to lecturers and physicians as the various points may be shown more clearly with the use of these pictures.

Remittance should be made by check or postal money order, payable to The Superintendent of Documents, Government Printing Office, Washington, D. C. Do not send stamps.

Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces the following open competitive examinations, applications for which must be on file with the Commission in Washington, not later than dates named:

Physiotherapy assistant by May 7th.

Social worker (psychiatric) and junior social worker; graduate nurse, graduate nurse (visiting duty), and graduate nurse (junior grade); physician and associate physician; and occupational therapy aide and occupational therapy pupil aide by June 29th.

Dietitian by July 1st.

Full information about these may be obtained from the Commission.

Program of Post-Graduate Instruction.

The Gill Memorial Hospital announces a course in post-graduate instruction in ophthalmology, otology, rhinology, laryngology, faciomaxillary surgery, oral surgery, bronchoscopy and esophagoscopy, to be given at the Hospital, 711 South Jefferson Street, Roanoke, Va., April 8th to 13th, inclusive. Among those who will have clinics at this time are: Dr. Wells P. Eagleton, Newark, N. J.; Dr. Walter Dandy, Baltimore; Dr. E. G. Gill, Roanoke; Dr. Cornelius G. Coakley, New York; Dr.

Robert H. Ivey, Philadelphia; Dr. John A. L. Kolmer, Philadelphia; Dr. H. D. Scarney, Roanoke; Dr. H. S. Hedges, Charlottesville; Dr. John Wheeler, New York; Dr. D. L. Poe. New York; and Dr. Clyde E. McDannald, New York. Information about this course may be obtained from the Hospital.

Physicians' Business Bureau, Inc.

The Richmond Academy of Medcine has endorsed the Physicians' Business Bureau, Inc., which now numbers among its members a large number of the medical profession of the city. At the recent annual meeting of the Bureau the following officers and directors were elected: President, Dr. Wm. H. Parker; first Vice-President, Dr. R. W. Miller; second vice-President, Dr. Thos. D. Jones; Secretary and Treasurer. Dr. R. S. Faris. These with the following members compose the Board of Directors: Dr. M. L. Anderson, Dr. Joseph Bear, Dr. H. W. Blanton, Dr. A .I. Dodson and Dr. Fred M. Hodges.

The objects of the Bureau are the education of the public to the prompt payment of their doctors' bills, and the collection in an ethical way of its members' delinquent bills—this without hardship to the patient, as each case is investigated. The rates are reasonable.

The Bureau is a non-profit earning organization. The medical and allied professions alone can own stock, and, when capital is repaid as the Bureau becomes self-supporting, the surplus earned after making allowance for overhead expenses goes to a reduction of collection charges. All officers serve without compensation, and have given their time freely to make it a success. Results in other cities where the plan has been working for some time are most gratifying, as the public has gradually become educated to the fact that the accounts of physicians and hospitals should be paid the same as are other obligations.

It is apparent from the records of the Bureau here that the public welcomes the idea, and the members who are using the collection end are very enthusiastic and report no offense given patients.

Married.

Dr. William O. McCabe, Thaxton, Va., and Mrs. Lola Weeks Serber, December, 1928.

Dr. Joseph T. McKinney,

Was recently elected president of the Roanoke Kiwanis Club for the year 1929.

Danville Hospitals Consolidate.

Announcement was made early in January that negotiations had been completed for the merging of the Memorial Hospital and Edmunds Hospital, of Danville, Va., the merger to be completed in sixty days. This was done under satisfactory terms as being for the best interests of all concerned. It was announced that pupil nurses at the Edmunds Hospital would be transferred to other hospitals and that Dr. Edmunds would not sell his building for hospital purposes within ten years.

Dr. Drewry to Direct Virginia Mental Hygiene Bureau.

Dr. William F. Drewry, Petersburg, Va., for many years superintendent of the Central State Hospital in that place, has been appointed to the position of director of the bureau of mental hygiene in Virginia—a division of the Department of Public Welfare of this State. Dr. Drewry is well known as an expert in mental diseases, is a former president of the American Psychiatric Association and of the Medical Society of Virginia, and has for several years been a member of the governor's advisory board on mental hygiene. From his previous work and training, Dr. Drewry is especially fitted for his position. He is spending the month of February in the north where he is studying the operation and work of mental hygiene bureaus conducted in New York and Massachusetts with a view to equipping himself for his work in Virginia. He will enter upon his new work March the 1st. Headquarters will be in the old Virginia Hospital Building at 11th and Clay Streets, Richmond.

Dr. George W. Black,

Of the class of '24, Medical College of Virginia, after some time spent at Pinevile, North Carolina, has moved to Charlotte, with offices, at 1515 South Bolveard. He is engaged in general practice.

Dr. Johns Becomes Chief Surgeon at Johnston-Willis Hospital.

Announcement was made by the staff of Johnston-Willis Hospital, Richmosd, Va., following the death of Dr. Murat Willis, that there was no change in the staff of the Hospital. Dr. Frank S. Johns, who had been connected with the hospital for fifteen years and had been Dr. Willis' partner for ten years, became chief surgeon with Dr. Donald S. Daniel, recently of the Community Hospital, at Nassa-

wadox, Va., as his associate. The various departments of the hospital will continue to be conducted in accordance with the policy of the founders of the hospital, Drs. George Ben Johnston and Dr. Murat Willis.

The surgical department of the Nassawadox Hospital will also continue under Dr. John's supervision. Dr. Harry L. Denoon, Jr., Richmond, succeeded Dr. Daniel in the surgical department of the hospital at Nassawadox.

The following doctors are members of the staff of Johnston-Willis Hospital:

Drs. Randloph L. Anderson; A. F. Bagby; O. C. Brunk; Chas M. Caravati; J. G. Carter; Harvey DeJ. Coghill; Dean B. Cole; C. C. Coleman; Robert H. Courntey; Don S. Daniel; O. B. Darden; T. Dewey Davis; H. W. Decker; R. B. Easley; N. T. Ennett; Clifford A. Folkes; Carroll H Fowlkes; Richard W. Fowlkes; E. T. Gatewood; R. Finley Gayle; I. H. Goldman; I. T. Gorsline; C. C. Haskell; Emory Hill; J. Morrison Hutcheson; F. S. Johns; Basil B. Jones; Martin Lasersohn; F. H. Lee; J. G. Lyerly; H. Norton Mason; Howard R. Masters; H. Page Mauck; C. L. Outland; Robert S. Preston; Lawrence T. Price; W. W. Rixey; M. P. Rucker; P. E. Schools; W. A. Shepherd; J. B. Stone; Daniel D. Talley; J. McCaw Tompkins; Beverley R. Tucker; Dougles VanderHoof; B. H. Welford; Lawther J. Whitehead; and Jas. M. Whitfield, Jr.

Mortality Rate From Automobile Accidents Increases.

The Department of Commerce announces that for the 52-week period ending December 29, 1928, there were 7,516 deaths reported from seventy-eight cities in the United States as compared with 7,084 for the 52-week period ending December 31, 1927, showing a rate for 1928 of 22.9, or an increase of 5 per cent in the rate of such deaths in a single year.

Dr. G. L. Morriss,

Buckingham, Va., is spending sometime in New York City, where he is taking up postgraduate work.

Cities Offering Aid to Hard-of-Hearing Children.

Twelve cities of the United States have been placed on the honor roll of the American Federation of Organization for the Hard-of-Hearing; they test the hearing of school children by audiometer, have special classes to teach speech-reading to partly deaf children, and utilize available clinics. One of these cities—Rochester—has an ambulatory clinic especially for treating the school children. Several cities are meeting two requirements, and it is hoped that they will soon complete the third point and be eligible for the honor roll. A number of others are offering instruction in speech reading for the hard-of-hearing.

A Use for Condemned Murderers.

The Journal of the American Medical Association for January 5, 1929, in its London letter, tells of an address at a cancer campaign meetnig, in which Dr. F. G. Norbury stated that investigators were so hampered in having their experiments confined to the lower animals that he suggested that individuals condemned to death should be allowed, if willing, to give their bodies for experiment. He stated that they should be told of the danger of death and great suffering but, if they decided to take this chance for life, the investigator would at once produce cancer in him. Should he live for, say, five years, he should be released, especially if cured. Then, whether he lived or died, he would have made some reparation for the injury done to society.

Dr. J. B. Dalton,

Richmond, Va., has just completed a year's internship in New York City. After a vacation spent with his family, he left late in January for Boston, where he is making a further study in orthopedics.

Dr. D. W. Hamrick,

Of the class of '26, University of Virginia, Department of Medicine, after two years' connection with the department of pathology of the University of Missippi, recently located in Corinth, Miss., where he is engaged in the private practice of medicine. He limits his work to diseases of the eye, ear, nose and throat.

The Value of Outdoor Sunshine.

A person in an office or schoolroom having windows of the special glass which permits the passage of the sun's ultra-violet rays, and sitting in the direct rays of the sun, would get about as much ultra-violet light in three hours as in one hour in the open sunshine. Sitting in the same room beyond the direct rays for fifteen to twenty noontide sunlit hours would give an average effect equal to that of only two minutes in the outdoor sun. This is the conclusion of a study recently made at Johns Hopkins University. The report of the study states the opinion that this type of glass has undoubted usefulness in solariums, but that its installation in the windows of schools and offices would seem to be of little value.

For Sale—

Twenty years' established general practice in a Virginia town of 3,000 and a community

of 12,000. Within sixty miles of Washington, D. C., on main line railway. Fine schools and churches. Five hard surface roads outgoing, making this an all closed car practice. Two factories in town. Collections around $7,000 a year and can be increased. Wish to give up general practice. Own half interest with another physician in a $40,000 modern office and apartment building in center of town. Building has electric elevator and steam heat and pays good income. Will sell my interest in building to physician who takes over my practice, or half of my interest if allowed to continue office for chronic cases, with no house practice. Only good general man need apply. Address No. 139, care this journal.

Wanted to Buy—

Physician's combined residence and office property in city of between five and ten thousand population. Address No. 158, care this journal.

Obituary Record

Dr. T. Edwin Baird,

Norfolk, Va., died January the 6th, following a long illness. Though he was able to be up and even attend patients at times, frequent asthmatic attacks of a very severe type wore out his strength. Dr. Baird was born at Waverly, Va., sixty-three years ago. He graduated in medicine at the Medical College of Virginia in 1890 and had been a member of the Medical Society of Virginia since the following year. His wife survives him.

Dr. Robert H. Latane,

Buchanan, Va., died January the 12th, having been in failing health for some months. He graduated in medicine from the Medical College of Virginia in 1883 and became a member of the Medical Society of Virginia that year. His wife, three sisters and a brother, Dr. T. B. Latane, of Stevensville Va., survive him.

Dr. Nathaniel R. Smith,

Gainesboro, Va., died last May, at the age of sixty-eight years, after having been in bad health for sometime, according to information recently received at this office. He graduated from the Kentucky School of Medicine, Louisville, in 1883, and had been a member of the Medical Society of Virginia for a number of years.

Dr. Edward Thomas Mason,

Savageville, Va., died December the 5th at the age of fifty-eight years. Dr. Mason studied medicine at the University of Maryland, Baltimore, from which he graduated in 1891.

Dr. William Andrew Wallace,

Spartanburg, S. C., an alumnus of the former University College of Medicine, Richmond, Va., in the class of 1906, died at his home in Spartanburg, S. C., January the 30th. He was a native of Augusta County, Virginia, and forty-six years of age. He had made his home in Spartanburg for about twenty years. His wife and three children survive him.

Dr. Joseph Goldberger,

Surgeon in the U. S. Public Health Service and well known in this State where he had spoken before medical societies, died in Washington, D. C., January the 17th, following an illness of several years. He was fifty-four years of age, graduated from Bellevue Hospital Medical College, New York, in 1895, and was commissioned in the Service in 1899. His experimental work with pellagra and its preventive foods won him a high position in the medical profession.

Dr. Joshua Tayloe,

Washington, N. C., died December the 19th, at the age of fifty-eight years. His death was due to cerebral hemorrhage. He graduated from Bellevue Hospital Medical College, New York, in 1892. Dr. Tayloe was prominent in the medical profession of his State and was likewise identified with many civic enterprises.

Dr. Clarence Moore Bynum,

Marshville, N. C., a graduate of the Medical College of Virginia in 1914, died December the 17th, of pneumonia following influenza. He was thirty-six years of age.

Dr. Robert Vance Brawley,

Salisbury, N. C., died at his home in that place, January the 5th, death being due to pneumonia. He was fifty years of age and studied medicine at the former University College of Medicine, Richmond, from which he graduated in 1901. His practice was limited to ophthalmology.

Dr. Levi A. Walker,

Burlington, N. C., also an alumnus of the University College of Medicine, Richmond, in the class of 1898, died at his home in that place December the 28th after a brief illness, though he had been in bad health for several years. He had for many years been health officer of Burlington.

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PHYSIOLOGY OF THE ANEMIAS: NORMAL AND PATHOLOGIC.*

By REGENA C. BECK, M. D., Richmond, Va.

Anemia is a term applied to a reduction of erythrocytes and hemoglobin and likewise the clinical syndrome which may result. For a proper understanding of the physiology of the anemias it is necessary to consider the physiology of blood formation and disintegration and how the two processes are kept constant.

In infants at birth the erythrogenetic islets showing blood forming activity are found not only in the red bone marrow, but also in the liver, spleen, and lymphatic tissues. After a few months the erythrogenetic function becomes limited to the red bone marrow of all the bones where it remains localized until about the sixteenth year. After the sixteenth year the site of the formation of erythrocytes becomes further limited to the flat bones, small spongy bones, and heads of long bones.

In the adult, with excessive blood destruction and consequent need for new erythrocytes, the function in these infantile situations may be resumed to meet the need for increased output in the dire emergency, but the liver is called upon only in the most extreme need.

Histologically,[1, 2] the bone barrow is a very plastic tissue enclosed in a rigid case of bone and consists of fat cells; a blood vascular system made up of arterioles, venous sinuses and veins; and blood forming islets supported by a reticulum. The arterioles are thick walled, while the sinuses have very thin walls made up of a single layer of endothelial cells. The fat cells and erythrogenetic islets lie between these venous sinuses. The erythrocytes grow in very definite groups in the reticulum of the bone marrow, the nucleated cells and cells showing mitosis being centrally arranged in the grouping, with the cells toward the periphery becoming more and more of adult type. The adult cells thus come to lie in contact with the thin endothelial cells constituting the walls of the venous sinuses.

The passage of erythrocytes from the erythrogenetic islets to the blood stream is explained by Drinker[3] as follows. In the normal adult with steady growth by central expansion, we have the result of growth in a closed space and the cells are thereby forced into the circulation. The venous sinuses of the bone marrow contain blood at a very low pressure and it is into these yielding structures that growth steadily forces the adult erythrocytes that are being constantly produced in the erythrogenetic islets to keep pace with the constant disintegration of worn out cells in the peripheral blood stream.

Just what it is that keeps the rate of reproduction of erythrocytes at a definite pace with the destruction of erythrocytes—called "hemogenic-hemolytic balance"—is not definitely known. Leake[4] thinks that the growth of new red cells would be regulated more or less by demand, that the rate of production and entry of new red cells would be regulated by the rate of removal from the blood stream. This would imply some sort of hormonal regulation probably between the spleen and the red bone marrow. Drinker and Drinker[5] have shown that the arterioles entering into the venous sinuses in all cases appear to be supplied by vasomotor nerves, other nerve filaments being distributed through the blood forming tissue outside the vessels. These nerves appear to be afferent in character but the possible nerve control of the cellular secretion of the blood forming tissue is almost an unexplored field. Drinker[6] also states that the need for hemoglobin is the stimulus maintaining blood formation at its balanced level. Adult erythrocytes probably cannot increase their hemoglobin content and we must therefore look for more hemoglobin not in terms of augmented old cells, but in terms of new cells per unit volume of blood.

Normally, the erythrocytes in the adult male number about 5,000,000 or 5,500,000 in a training athlete, per cubic millimeter of blood and

*Read as a part of the symposium on "The Anemias" at the fifty-ninth annual session of the Medical Society of Virginia, in Danville, October 16-18, 1928.

in the female 4,200,000 to 4,500,000. At birth the erythrocytes number about 7,000,000 per cubic millimeter of blood and the count falls until the end of the first year when it is about 3,500,000 per cubic millimeter of blood. After this time there is a gradual rise to reach the adult count at the sixteenth year, the count remaining constant until the sixty-first year, when a slight gradual but steady fall begins. Thus it is seen that there are fluctuations in the number of erythrocytes associated with age and sex and it must be remembered that there are also diurnal variations in the erythrocyte count reported by Leake, Kohl and Stebbins.[7] In observations on healthy men and women from eighteen to thirty years of age the average diurnal variation in the erythrocyte count was 350,000 for the men and 310,000 for the women. Also the average source of error of plus or minus 2 per cent in the enumeration of erythrocytes should be kept in mind. One should be somewhat indifferent to variations in erythrocyte counts when such variations do not exceed 250,000 cells pur cubic millimeter of blood. Thus, too great a devotion to numerical expressions would not appear to be warranted.

The shape of a normal erythrocyte is that of a biconcave disc. An odd shaped erythrocyte is termed a poikylocyte. Huck and Bigelow[8] and Sydenstricker[9] state that odd shaped erythrocytes may appear in the blood of individuals in whom there is no fundamental blood disease. Poikylocytosis mentioned in the text books as evidence of blood destruction, therefore, may appear in otherwise normal blood as a familial anomaly. The size of a normal erythrocyte averages 7.5 microns and this measurement is fairly constant. A variation in size is termed anisocytosis, the cells larger than normal being termed macrocytes or megalocytes, and cells smaller than normal are termed microcytes.

Erythrocytes have staining characteristics which are diagnostic. When stained by the supravital method some show a coarse skein or network of granular filaments. These are called reticulated cells and this reticulation appears to be a characteristic of very young erythrocytes. The number of reticulated cells in the circulating blood is probably the best available index of activity in blood regeneration. An increase in the number of these cells may be interpreted as indicating both an excessive demand for new cells and a competent bone marrow. The normal percentage of reticulated cells is .3 to 1 per cent of all the erythrocytes. Polychromatophilic erythrocytes are those which have taken up some of the basic stain as well as the acid stain giving the erythrocytes a faint bluish color, which is also characteristic of very young cells.

Blood platelets are formed from the megakaryocytes of the bone marrow.[10] The megakaryocyte is a giant cell found wherever red blood cell forming tissue is found, and has a single ring-shaped nucleus made up of a number of large vesicular nuclei lying with edges overlapping and apparently fused together. By ameboid movement and also by the pressure of growth these cells enter into the venous sinuses of the blood forming tissue where they break up into blood platelets. The blood platelets are the principal source of prothrombin, an indispensable factor in the coagulation of the blood. Megakaryocytes are rarely in the blood stream, but are filtered out in the lungs on account of their large size. The normal blood platelet count, enumerated by direct method, ranges from 250,000 to 350,000 per cubic millimeter of blood. Physiologic variations in the number of platelets are marked since they increase at high altitudes, are higher in winter than in summer, and vary from day to day. Thus a single count should not be relied upon. There is also a greater unavoidable source of error in counting platelets than in counting erythrocytes, but the count is accurate enough for ordinary clinical purposes, since only a very great variation in the count would have clinical significance.

The origin of hemoglobin would appear to be in considerable doubt even yet. The materials from which it is synthesized are derived in the metabolism of food and from conserved pigment and iron remaining in the liver from the breakdown of hemoglobin of previously destroyed erythrocytes. The factors necessary for the actual synthesis remain obscure but it would appear that sunlight and certain accessory food factors are significantly involved. The actual place of formation of hemoglobin from its components seems to be in the red bone marrow and it appears in the erythrocytes during some stage of their formation. Normally, the amount for each erythrocyte is fairly constant. The color index indicates the amount of hemoglobin in each erythrocyte

compared with the normal amount. The normal color index is one which is obtained by dividing the percentage of hemoglobin by the percentage of erythrocytes. When an abundant supply of building material is available, the bone marrow may build an excess of hemoglobin into the erythrocytes giving a high color index. This is seen in some hemolytic anemias where the iron containing portion of the liberated blood pigment is retained in the body for future building of hemoglobin and the non-iron containing portion is eliminated as urobilin. If the iron is lost by hemorrhage or the bone marrow is unable to utilize the materials at hand, the erythrocytes are deficient in hemoglobin and the color index is low. The lowest color index is found in chlorosis, where the materials cannot be used and in post-hemorrhagic anemia where the iron is lost. This, of course, is only one of many explanations for the color index.

Now, as to the methods by which worn out erythrocytes leave the circulation: Rous[11] states that there are two methods by which this takes place—(1) fragmentation anywhere in the blood stream with the fragments lodging in the spleen and other organs rich in reticulo-endothelial cells; (2) phagocytosis which takes place chiefly in the spleen. The average span of life of an erythrocyte in the blood stream is estimated by Addis[12] to be about fourteen days; by Ashby[13] about thirty days Addis[14] also estimates that 7 per cent of the total number of erythrocytes in the body disintegrate daily, which would be 1,750,000,000,000 erythrocytes destroyed daily and a proportionate amount of iron removed from the circulation. Although this enormous number of erythrocytes are disintegrating daily they have a normal resisting power which can be measured by subjecting them to the action of various harmful agents. This is called the fragility test and the reagent generally used is a hypotonic salt solution. Normal erythocytes will not begin to hemolize until the salt solution reaches .44 or .42 per cent. By this test it is possible to determine if an excessive hemolysis is referable chiefly to increased fragility of the erythrocytes, or to an excessively toxic hemolytic agent acting upon erythrocytes of normal resisting power.

It is important to keep in mind the distinction between erythrocytes and hemoglobin and to remember that hemoglobin is organized in the erythrocytes and is the essential material for providing the cells of the body with the oxygen necessary for life. It does not bear any constant relation to the number of the erythrocytes. Hemoglobin content varies with age and sex and there is a diurnal variation worked out by Mills[15] and Gram[16]. In estimating the hemoglobin, Leake[17] found the limit of error to be about plus or minus 5 per cent with the usual clinical methods. Here also, as with the erythrocytic percentage unwarranted devotion to numerical expressions would appear to be unwise.

The custom of recording hemoglobin in percentage terms is grossly inaccurate and leads to much confusion. The situation is further complicated by the fact that hemoglobinometers in general use employ different standards, and a specimen of blood which reads 100 per cent on the Dare instrument, for example, will read about 80 per cent on the Sahli, 81 per cent on the Newcomer, and about 87 per cent on the Tallquist, if the calibrations are in accordance with the claims of the several makers. A record therefore means little unless one knows what instrument was used and the age and sex of the patient. This confusion could be avoided if records were made in actual percentage of hemoglobin that is, grams per 100 c.c. of blood. This plan has been adopted by certain large hospitals and has been proposed by the American Society of Clinical Pathologists for consideration as a standard method. The reading on any type of instrument can be easily converted into grams if one knows what amount of hemoglobin was adopted as the standard representing 100 per cent. Lindsay, Rice and Selinger[18] have suggested 14 to 17 grams per 100 c.c. as the normal limits of hemoglobin content of the blood, these figures being used in the same manner as the normals in blood chemistry. This would correspond to 83 to 101 per cent on the Newcomer hemoglobinometer which some investigators[18, 19] recommend as the best instrument for clinical work.

Keeping in mind the normal blood picture, and differences from the academic normal which are not greater than the average variation, and thus may for all practical purposes be considered normal, we may pass to a brief consideration of the physiology of the clinical types of anemias.

Clinically, it is customary to divide anemias

into two groups termed, "secondary" and "primary", and, although this classification has its shortcomings, it has long been in general use and will be adhered to now because it is convenient and easily followed.

Secondary anemias are symptomatic of some underlying pathological condition, while primary anemias appear to develop and progress independently of any other concomitant disease. It is not always easy to make the distinction between the two groups, although each has a more or less distinctive and characteristic blood picture.

In secondary anemias the blood changes vary somewhat with the cause, but in general the blood picture is so similar for all cases of secondary anemia of the same severity that we may consider them as a group.

Diminution of hemoglobin is the constant and most characteristic feature of secondary anemias. In mild cases it may be slight, usually 60 to 70 per cent; in severe cases 40 to 50 per cent, and in extreme cases 15 per cent or even less. The color index may be reduced as low as .8 to .7 but rarely as low as .5. The leucocytes do not bear any direct relation to the anemia but neutrophilic leukocytosis is common. In mild cases stained films show no appreciable change, but in moderate to severe cases there will be seen anisocytosis, poikilocytosis, some polychromatophilia and even occasional nucleated erythrocytes. The severe forms also show basophilic degeneration and small or considerable numbers of nucleated erythrocytes as noted above. Large nucleated erythrocytes have been encountered in certain severe cases of secondary anemia. They may be especially numerous and even exceed the normal size nucleated erythrocytes in severe anemias due to Dibothriocephalus Latus infection, which gives a blood picture identical with that of pernicious anemia, and also in the anemias symptomatic of malignant disease presumably with metastasis in the bone marrow.

Secondary anemia due to lead poisoning differs from other secondary anemias in that the blood smear contains a large number of erythrocytes showing basophilic stippling which is a strking feature of diagnostic significance.

Post-hemorrhagic anemias also show differences from the usual secondary anemias. Immediately after a large hemorrhage the erythrocyte count will be the same as before the hemorrhage, but within a few hours, when the volume of blood is in a large measure restored by means of fluid from the body tissues with consequent dilution of the blood the situation undergoes adjustment; and after one or two days the erythrocytes and hemoglobin fall to a figure proportionate to the amount of blood lost. Active regeneration of erythrocytes begins probably within twenty-four hours and the new erythrocytes are deficient in hemoglobin, which is reflected in the low color index. Some of the new cells show polychromatophilia, and a few nucleated erythrocytes are present, with a moderate neutrophilic leucocytosis. The blood platelets are strikingly increased, even up to one million per cubic millimeter, with increased coagulability of the blood. The normal blood picture is restored in about one month in a previously healthy adult. After a loss of 500 to 600 c.c. of blood, the amount usually taken from a donor for transfusion, the blood picture may be normal again in about one week, although the percentage of hemoglobin is more slowly restored than the other elements.

Under the primary anemias let us consider chlorosis, acute aplastic anemia, hemolytic jaundice, and pernicious anemia.

Chlorosis is an anemia of defective blood formation, confined almost exclusively to girls within the decade following the age of puberty, and is thought to be due to an anomaly of internal secretion of the female sex glands. Incidentally, this disease is now becoming rare. The clinical symptoms furnish the important data for diagnosis but a consideration of the blood findings is essential. There is a marked decrease of hemoglobin with a slight decrease of erythrocytes, giving a strikingly low color index, which may be as low as .3. There is a marked achromia giving a striking ring-like appearance to the erythrocytes. Cells are of uniform size with average diameter a little less than normal. Nucleated erythrocytes are rare. Platelets are increased and the coagulability of the blood is increased. Leukocytes are normal or decreased in number.

Acute aplastic anemia is a rare and rapidly fatal anemia of obscure etiology which appears to be the result of a more or less complete failure of blood formation. At autopsy the red bone marrow is found to have almost completely disappeared, even from the flat bones and the bodies of the vertebrae. The

failure first involves the formation of erythrocytes, then the leukocytes, and finally the blood platelets and, when the platelets become greatly diminished, symptoms like those of purpura hemorrhagica appear. The disease occurs most frequently between the ages of sixteen and thirty, with a duration of about two or three weeks. Stained films show very little of importance. Reticulated erythrocytes are rare and fragility is normal.

Hemolytic jaundice is a rare, chronic, generally hereditary disease, characterized by periods of excessive hemolysis due either to strong hemolytic poisons or to excessive fragility of the erythrocytes. The most striking laboratory finding is markedly increased fragility. The anemia is usually extremely marked, erythrocytes fall as low as 1,000,000 and the color index is .8 or .9. Sometimes the anemia takes on the character of progressive pernicious anemia. The urobilin of urine, feces, and duodenal contents is high. Reticulated erythrocytes may go up to 20 per cent or higher.

Whether pernicious anemia is an entity or whether it represents a group of conditions with similar pathogenesis but different etiology would appear to be a debatable subject. It appears certain that some obscure noxious or toxic agency is responsible for the excessive destruction of erythrocytes and the active abnormal regeneration of erythrocytes by the bone marrow. The nature and origin of the hemolytic toxin however is unknown. Macht[20] has shown that the blood serum of pernicious anemia patients is peculiarly and characteristically toxic for plant protoplasm; and Schultin[21] has shown that the rationale of the liver diet treatment for pernicious anemia, which is yielding such splendid clinical results at this time, is to neutralize this toxin. Ordway and Gorham[22], however, have observed that the underlying pathologic process remains unaffected, and thus, like insulin, the liver diet cannot be considered a cure for the condition for which it is given, although symptoms may be held in abeyance for a protracted period. Since the liver is the great detoxicator of the human economy, it seems reasonable to suppose that pernicious anemia is due to a diminished activity or deficiency in this function of the liver, and that the feeding of liver from a normal animal adds to the body resources this missing substance. This idea would appear to gain strength with recent demonstrations that a liberal, balanced, general diet which includes sufficient liver per day, cooked or raw, or a potent extract of liver, is as effective as the original Minot and Murphy diet.[23] The course of the disease and the blood picture vary with the varying rate of blood destruction and with the functional sufficiency of the erythrogenetic islets. As a terminal result, the bone marrow may become exhausted, giving a blood picture similar to that of aplastic anemia. Characteristic of the clinical course is a striking tendency to clinical remissions, either spontaneous or induced, lasting from a few weeks to a few months or even years. The early disappearance of free HCl from the gastric juice when once established persists even when the blood is practically normal and is reported as persistently continuing when improved as a result of the liver diet.

In conclusion, I should like to offer a summary of the blood picture in pernicious anemia. Erythrocytes greatly diminished, color index above one, leukocytes normal or diminished, platelets reduced and coagulation time delayed. The smears show anisocytosis with many macrocytes, and a few nucleated erythrocytes. Achromia is absent but polychromatophilic erythrocytes showing basophilic granular degeneration are numerous. The reticulated erythrocytes range between 1 and 5 per cent and may go as high as 20 per cent. This is a useful index as to the activity of blood regeneration and they are seen to steadily rise as a remission begins or the liver diet is begun. The fragility is only slightly increased, indicating that excessive hemolysis is not due to increased fragility of the erythrocytes as in hemolytic jaundice.

BIBLIOGRAPHY.

1. Drinker, Drinker and Keutzmann—*Jour. Exper. Med.*, 1918, Vol. XXVII, p. 249.
2. Drinker, Drinker and Lund—*Amer. Jour. Physiol.*, 61:1, 1922.
3. Drinker—*Amer. Jour. Physiol.*, 62:1, Sept., 1922.
4. Leake—*Wisc. Med. Jour.*, Vol. XXV, No. 3, March, 1926.
5. Drinker and Drinker—*Amer. Jour. Physiol.* 1926, Vol. XL, p. 514.
6. Oxford Medicine, Vol. II, p. 547.
7. Leake, Kohl and Stebbins—*Amer. Jour. Physiol.*, 81:493, July, 1927.
8. Huck and Bigelow—*Bull. Johns Hopkins Hosp.*, 34:390, 1923.
9. Sydenstricker—*Jour. A. M. A.*, 81:114, 1923.
10. Wright—*Virchow's Arch. of Path. Anat.*, 1906, CLXXXVI, p. 55, *Jour. Morph.*, 1910, XXI, p. 263.
11. Rous—*Physiol. Review*, 3:75, Jan., 1923.

12. Addis—*Archives of Int. Med.*, 1915, Vol. XV, p. 413.
13. Ashby—*Jour. Exper. Med.*, 1919, Vol. XXIX, p. 267.
14. Addis—*Arch. of Int. Med.*, 1915, Vol. XV, p. 413.
15. Mills—*Arch. of Int. Med.*, June, 1925, Vol. 35, p. 760.
16. Gram—*Amer. Jour. Med. Sciences*, 1924, 168: 511.
17. Leake—*Wisc. Med. Jour.*, Vol. XXV, Nov. 3, March, 1926, p. 107.
18. Lindsay, Rice and Selinger—*Jour. of Lab. and Clin. Med.*, Vol. XI, No. 8, May, 1926, p. 737.
19. Sentry—*Jour. Lab. and Clin. Med.*, 1923, VIII, p. 591.
20. Macht—*Jour. A. M. A.*, Sept. 3, 1927, Vol. 89, p. 573.
21. Schutin—*Meunchener Medizinische Woehenschrift*, Munich, 75:633—680, Apr. 13, 1928.
22. Ordway and Gorham—*Jour. A. M. A.*, Vol. 91, No. 13, p. 927. Sept. 29, 1928.
23. Minot and Murphy—*Jour. A. M. A.*, 87:470, Aug., 1926, and Ib'd 89:759, Sept. 3, 1927.

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THE SYMPTOMATOLOGY AND DIAGNOSIS OF THE ANEMIAS.*

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A thorough understanding of the symptoms and signs of anemia will often aid us in making a diagnosis of many obscure conditions. Anemia may so alter the physiology of various organs that the symptoms produced may simulate many organic diseases. For instance, the cardiac symptoms may be confused with primary heart disease, or the gastric symptoms of pernicious anemia with cancer of the stomach.

For convenience in discussing the symptomatology and diagnosis, the anemias will be arranged in three groups. In Group I are the anemias due to mechanical blood loss; in Group II, those due chiefly to defective blood formation, and in Group III, those due chiefly to increased blood destruction.

The changes which occur in the tissues due to anemia produce a chain of symptoms which may occur in any of the various types of anemia. These vary according to the duration, the character and the intensity of the anemia. In the skin there is usually pallor, although in the lesser grades of anemia the skin may not be pale, while in the severer grades pallor may be overshadowed by jaundice or pigmentation. Lassitude and general muscular weakness are probably the most outstanding symptoms of anemia. The general weakness is a result of a diminished supply of oxygen to the tissues, and effort, either physical or mental, induces varying degrees of fatigue, depending upon the amount of reduction in hemoglobin or in the red cells. An individual with a hemoglobin above 60 per cent can usually carry on his daily duties without marked discomfort, but when the hemoglobin falls below 60 per cent sustained effort is difficult. There are certain symptoms which may be classed as follows: First, those referrable to the gastro-intestinal tract, such as nausea, vomiting, fullness, epigastric pain, constipation or diarrhea. These are very prominent in pernicious anemia. Second, those pertaining to the cardio-vascular system such as, shortness of breath, tachycardia, precardial pains, palpitation, which may be the patient's chief complaint. Third, the symptoms from the central nervous system, as headache, insomnia, drowsiness, excitability and vertigo may be present. In addition, other symptoms may occur in anemia, as elevation of temperature, tendency to hemorrhage, amenorrhea, edema, low specific gravity of urine, and albumin. The symptoms and signs peculiar to each individual type of anemia will be discussed under the diagnosis.

The diagnosis of diseases of the blood and blood forming organs in many instances is very simple, while in others it is one of the most difficult problems in medicine. A carefully taken history, a thorough physical examination and complete examination of the blood are necessary in arriving at a diagnosis.

I. Anemia Due to Mechanical Blood Loss

Anemia due to mechanical blood loss may be acute or chronic.

The diagnosis of acute anemia due to blood loss is usually made from the history, and clinical picture. Immediately following acute hemorrhage when considerable amount of blood is lost the red cell count is normal, but within a few hours as the blood volume is being restored the red corpuscles and hemoglobin show a reduction while polymorphonuclear leucocytes are increased. The blood pressure in acute hemorrhage is low, and a continued low systolic pressure is indicative of persisting hemorrhage.

Acute concealed hemorrhage may be confused with shock. However, the history and physical findings will usually establish the differentiation.

The diagnosis of chronic anemia due to blood loss is usually obtained from the his-

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tory and the finding of the condition responsible for the hemorrhage. The blood examination will show varying degrees of anemia with increased bone marrow activity. Although in prolonged or repeated hemorrhage the bone marrow activity may be diminished, and the blood findings are similar to those of pernicious anemia, the typical histological cells and the increased blood destruction of pernicious anemia do not occur in chronic hemorrhage.

Anemia due to chronic hemorrhage is sometimes associated with abnormalities of the blood, as in purpura hemorrhagica, which can be determined by a complete study of the blood.

II. Anemia Due Chiefly to Defective Blood Formations

The anemias due chiefly to defective blood formation are numerous. A study of the blood will show varying degrees of anemia with normal or diminished bone marrow activity. Some of the anemias of this group may show slight evidence of increased blood destruction, but the predominating feature is aplasia.

Simple anemia due to defective blood formation is the most frequent type met in general practice. The causes are numerous, the most frequent of which are intoxication from poisons, such as lead, mercury, arsenic, etc., infections of all types, intestinal parasites, toxemias from the liver and kidneys, deficient diet and lack of outdoor exercise. The symptoms the patient may present are usually those of the underlying condition, and the anemia found in the course of general examination may be a factor in retarding the patient's convalescence. The blood findings are varying degrees of reduction in the hemoglobin and red cells, which latter show no special morphological changes.

Myelophthisic anemia is due to a crowding out of the hemopoietic structures of the bone marrow by tumors or tumor-like formations, and the diagnosis is dependent on the finding of the malignant growth with metastasis to the bone, or primary bone tumors, such as myeloma or chloroma. The erythrogenic areas are also crowded out in the leukemias.

Chlorosis, a condition becoming more rare, is characterized by a low hemoglobin, out of proportion to the reduction in the red cells.

Idiopathic aplastic anemia is a distinct blood disease, which is progressive and has a fatal termination within a few weeks or months. In the early stages there is usually a history of increasing weakness for weeks. Sometimes there is a history of infection. These individuals appear pale, and the skin usually has a waxy appearance. In the late stages there are usually petechial hemorrhages or symptomatic purpura hemorrhagica. Examination of the blood shows no evidence of bone marrow activity. The white cells are greatly reduced with an absolute diminution of the polymorphonuclear leucocytes. The platelets are markedly decreased, and often absent. The red cells are very low, frequently below one million. A stained smear shows very little change in their size, shape, or amount of hemoglobin. The reticulocytes and nucleated reds are usually absent. The resistance of the red cells to salt solution shows beginning hemolysis in about the same strength as normal cells, but complete hemolysis is in a higher percentage of salt solution. This type of reaction is very unfavorable. The diagnosis can usually be made from the history and blood findings.

Since there are petechial hemorrhages in aplastic anemia, there may be confusion with true purpura hemorrhagica. But in idiopathic aplastic anemia the petechial hemorrhages occur after the anemia develops, while in purpura hemorrhagica the petechial hemorrhages precede anemia.

III. Anemia Due Chiefly to Increased Blood Destruction

The hemolytic anemias are characterized particularly by increased blood destruction, although some of these may also show defective blood formation. In certain instances many of the hemolytic anemias may terminate in aplastic anemia.

During certain periods pernicious anemia produces symptoms and signs referable to more structures or organs than any other form of anemia. General muscular weakness is one of the most prominent complaints. In the early stages there is usually a history of sore mouth, nausea, and recurrent attacks of diarrhea. The free HCl is most often absent. The skin shows varying degrees of light jaundice, and the spleen is usually enlarged. As the disease progresses the symptoms referable to the cardio-vascular and central nervous sys-

tems may be marked. The blood examinations show evidence of increased blood destruction, with megaloblastic regeneration. The diagnosis should be made from a thorough study of the blood interpreted in the light of the history, and physical examinations.

The differential diagnosis of pernicious anemia during certain stages is very difficult. The gastro-intestinal symptoms may resemble those of cancer of the stomach, but a negative X-ray finding and complete study of the blood will establish the diagnosis of pernicious anemia. The history and blood findings of pernicious anemia do not occur in primary heart disease. Aplastic anemia and other hemolytic anemias each have their characteristics.

Acute hemolytic anemia occurs most frequently in sepsis, malaria and pregnancy. The skin is jaundiced, and there is usually enlargement of the spleen. The diagnosis is dependent upon the finding of the condition producing the hemolysis.

The chronic hemolytic anemias may be acquired or congenital.

The chronic acquired types are produced in the same manner as the acute hemolytic forms, but the course is less severe. The most frequent causes are syphilis, fish tapeworm, cancer and pregnancy.

Chronic congenital hemolytic jaundice represents one of the purest types of excessive blood destruction. The clinical aspects are familial tendency, mild course, jaundice, enlarged spleen, mild exacerbations, diminished resistance to salt solution, and usually associated gall-stones.

In summarizing this sketchy review of the large domain of anemia, one is justified in the light of present knowledge in arriving at the following conclusions: First, the anemias are due to mechanical blood loss, defective blood formation, or pathological hemolysis. In so-called primary anemias, defective bone marrow physiology and abnormal internal blood destruction probably are associated etiological factors, but in each group one or the other predominates. Symptomatically, all the anemias behave alike in so far as their symptoms are due to anoxemia. However, the entire clinical picture varies according to the basic etiological factor on the one hand, and the associated somatic changes on the other. The diagnosis should not depend upon any single factor, but upon a careful consideration of the history, physical examination, and thorough study of the blood.

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THE MEDICAL TREATMENT OF THE ANEMIAS.*

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Owing to time limitations, these remarks on the treatment of the anemias will be limited to one specific disease—primary pernicious anemia—and another group (to be more definitely defined later), some of the more frequently encountered secondary anemias.

Pernicious Anemia

It may be stated without reserve or hesitation that the treatment of pernicious anemia with liver substance is one of the most brilliant medical achievements of our day. Recently published papers and discussions have so fully and admirably summarized the present state of our knowledge in this subject that the reviewer finds it difficult and even embarrassing just at this time to make further interpretations. Certainly, I should not attempt it except as an assigned task.

Reports of the results of treatment of pernicious anemia with mammalian liver and liver extracts are singularly unanimous in all essential details. There is available a series of cases sufficiently large to bring conviction to the most skeptical. The major observations have been carried forward under conditions so carefully controlled as to make this work an eloquent tribute to modern scientific methods.

The outstanding fact is that if a patient with pernicious anemia during the period of relapse is fed approximately one-half pound of liver a day, about 230 gms., or a potent extract from 400 to 600 gms. of this liver, the blood will quickly assume or approximate the appearance of that of a normal individual and the patient will be correspondingly relieved of the more usual and distressing symptoms of the disease. This epoch-making contribution to medicine we owe to Dr. George R. Minot, of Boston, and his coworkers, who in turn were directed to the problem by the experiments of Dr. George H. Whipple and associates. Whipple had announced the observation that anemia produced in dogs by repeated bleeding was very favorably influen-

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ced by the addition of liver and kidney to the diet. Minot, impressed with these observations, gave the liver diet a thorough going trial under carefully controlled conditions with the result with which we are now familiar. Now that clinical experience has thus far demonstrated the relatively small and uncertain value of liver diet in ordinary cases of secondary anemias, including those resulting from hemorrhage, its marvelous and specific action in pernicious anemia is seemingly a strange paradox.

The typical and almost invariable effect of liver therapy is as follows: From a level of 1 to 3 per cent there is a delivery of young red cells—reticulocytes—into the peripheral circulation amounting to 5 to 6 per cent within three to five days, reaching a maximum of 10 to 30 or sometimes 50 per cent in about ten days, falling again by the fifteenth or the twentieth day. The red cells show a prompt increase, frequently an addition of two and a half million in thirty days. The hemoglobin percentage rises more slowly, but eventually approximates a normal reading. The icteric index falls and the yellow color of the skin disappears. The morphology of the blood gradually returns to normal as macrocytes, microcytes and polychromatophilia disappear. The leucocytes rise with increase in polymorphonuclears and eosinophiles. Platelets also increase in numbers. The patient is symptomatically improved with the change in blood picture.

Patients who have maintained the diet have now sustained this remission for three years or more. When liver is omitted there is a gradual relapse to former condition. A return of free hydrochloric acid to the gastric juice has been reported in only a few cases. Rather strangely I think the administration of hydrochloric acid is said not to be of value, but further evidence is desirable on this point. Well marked evidence of involvement of the central nervous system (most commonly combined sclerosis) usually remains unchanged, although the early symptoms may disappear or show improvement. The records of some five hundred to a thousand carefully studied cases are available and the results reported are surprisingly uniform.

Properly prepared liver extract in adequate dosage has essentially the same beneficial effect as liver substance. Perhaps the hemoglobin increase is not quite so rapid unless iron is supplied either in the food or in the inorganic form. The extract used in most cases reported is that prepared by the Eli Lilly Company under supervision of the Pernicious Anemia Commission of the Harvard Medical School. The active principle of liver affecting the course of pernicious anemia is soluble in water, insoluble in ether and precipitable by alcohol. It is thought to be either a nitrogenous base or a polypeptid. This particular preparation is now being marketed by the Lilly Company as preparation No. 343. It is a yellowish powder, soluble in water and when given in doses of about .6 gm. a day produces the characteristic response of reticulated cells.

The extract naturally has many advantages over liver feeding. Many people do not like liver and it is apt to pall upon the taste when eaten every day for months and years. Furthermore, it cannot be regularly supplied in rural districts.

It is already apparent that precautions must be used in the preparation of the extract as relatively inactive lots have been encountered. It should also be borne in mind that a fertile field for commercial exploitation has been opened and only those extracts should be relied upon which have been carefully standardized.

Minot and Murphy report no effects from liver or liver extract on the blood of the normal individual. Recently, Berglund, of Minnesota, reports that he has produced an increase of red cells and hemoglobin at least temporarily in the normal subject. This investigator also finds greater potency in the liver substance of fetal calves in certain secondary anemias than from the livers of adult animals. This, of course, is suggestive but needs further study.

Secondary Anemias

In comparison with these clear cut and most satisfactory results from liver extract in pernicious anemia, the question of the effect of liver substance on the secondary anemias is at present very much in the air. The reported cases of Minot and Murphy would indicate that its field of usefulness in anemias other than the pernicious form is quite limited. As against this we have the evidence of Whipple that liver has an appreciable effect upon the anemia of laboratory animals after hemor-

rhage. This experimental evidence is supported by the experience of others. Clinical reports are exceedingly variable and at present hard to interpret. The anemia caused by the fish tape-worm—dibothriocephalus latus—and which closely resembles pernicious anemia morphologically, admittedly reacts very much as does pernicious anemia. Certain anemias arising during pregnancy of obscure origin have been reported as being materially benefited. In fact, isolated cases of many varieties of anemia are said to have responded favorably to liver diet. On the whole, however, it would seem that this method of therapy cannot be thought of at the present time as being specific for the secondary anemias. We are, therefore, not justified in relying upon liver treatment in such anemias, certainly to the exclusion or neglect of other measures.

A very large percentage of secondary anemias we are called upon to treat are due either to hemorrhage, bacterial infection, parasitic infestation, toxemias resulting from diseases, such as nephritis, cirrhosis of the liver, malignancy, or to defective nutrition. This list by no means exhausts the causes of secondary anemia, as will be readily seen, but are to be thought of as the causes most frequently operative in this part of the world.

Assuming that we have done our full duty in patiently searching for and as far as practicable removing the cause in a given case, what further measures are available in treating the anemia? When we are confronted with sudden and considerable blood loss, or a very severe type of anemia from other cause (with the exception of the pernicious type), or a chronic anemia which has resisted other methods of treatment, unquestionably the most prompt and efficient measure for relief is blood transfusion. The idea of transferring blood in some manner, either from the lower animals to man or from one human being to another had its birth in the very earliest era of medical history. No attempt will be made either to trace the historical development of blood transfusion or to discuss in adequate fashion the present day status of this therapeutic measure. However, in view of the importance of blood transfusion in the anemias and the growing frequency of its use, at least brief mention must be made of some of the principles involved.

Blood transfusion as a relatively safe and practical therapeutic measure is largely dependent upon the more exact knowledge of the phenomena of iso-agglutination and hemolysis developed in the first decade of the present century, coincident with improved technical methods and larger experience in and about the period of the World War. Human healthy blood is, of course, an ideal substance to introduce into the circulation of a patient having blood deficiency. The plasma fulfils physiological demands more fully than any fluid yet devised, although in emergencies blood volume may be temporarily restored by physiological saline solutions. It has been definitely proven that the transfused red blood corpuscles will function in the body of the recipient and that the life of the individual cell is of considerable duration. Records on this latter point are somewhat conflicting, but it would seem safe to assume that in properly matched cases red cells will live forty to sixty days and carefully controlled experiments have indicated an even longer period of life.

When done under proper precautions it may be said that blood transfusion, while not without some danger of unfavorable or even serious reaction, is a relatively safe procedure. In experienced hands whole blood transfusions are not technically difficult and if an anticoagulant is used, the whole procedure is a relatively simple one, even for those of small experience.

In our very proper enthusiasm we should always keep in mind the dangers involved, some of which we do not yet fully understand and others can be obviated only by utmost vigilance. It cannot be too strongly emphasized that careful matching of the blood of the donor with that of the recipient should always be done immediately before transfusion. Persons having blood of type IV of the Moss classification are, of course, much more favorable subjects, either as donors or recipients, but it should not be overlooked that intercurrent infections and probably other causes may temporarily change the agglutination reaction in any individual blood. Donors should preferably be young, reasonably vigorous individuals and proven free of transmissible disease, particularly syphilis.

The ideal method undoubtedly is the delivery of healthy unchanged blood directly into the circulation of the patient. At present the technical difficulties of accomplishing this have

not been altogether overcome, certainly for those who are only occasionally called upon to perform transfusions. In the hands of those especially trained it would seem to be the method of choice. The citrate method being far simpler for the average person, the question is a natural one as to whether the citrate method has any real objections as compared with other methods. I think it may be fairly stated that in the concentration used, about .2 of 1 per cent, sodium citrate does not lengthen but apparently shortens the coagulation time *in vivo*, a point which would, of course, arise in transfusions for hemorrhage of various causes. It is said to have the disadvantage of increasing the fragility of red cells, it reduces the opsonic index of the plasma and the phagocytic power of the leucocytes. Some observations indicate that it causes a disintegration of platelets and destroys complement. All of these effects are probably relative and it is still a question whether the effect of citrate in this and other possible ways is sufficiently powerful to make it a practicable objection.

What of dosage? It is well to remember that the total blood volume is about 5 per cent of the body weight of an individual, which in the average adult would be about 4 litres; for an infant of 7 lbs. about 160 c.c. Clinical opinion varies somewhat widely as to optimum dosage. As much as 2,500 c.c. has been given to adults in extreme cases. On the other hand some advise small amounts, 5 to 10 c.c. daily. The usual custom is to give about 400 to 700 c.c. at a time and this can be repeated at intervals of one to two weeks when necessary. Infants and children receive amounts proportional to body weight.

Donors must also come in for some consideration. While it has been shown that the body will withstand the loss of one-third of the total blood volume, which in the adult would be 1,200 to 1,500 c.c., without untoward symptoms, it is wise to keep well below this limit. A vigorous, healthy individual will usually have no ill consequences from the loss of 500 c.c. Many professional donors have given enormous quantities of blood over periods of five or six years. However, experience indicates that well marked anemia may result from too frequent donations; 500 c.c. at intervals of four to six weeks is perhaps conservative. It should be remembered that blood is toxic in direct proportion to the chemical alterations toward coagulation, therefore speed is of great importance when anticoagulants are not used, and careful mixing and avoidance of coagulation is imperative in the citrate method.

In repeated multiple transfusions, sensitization may occur, as in the administration of horse serum, but such cases must be rare and can be avoided by desensitization. In infants before closure of the fontanelle, transfusion has frequently been done into the longitudinal sinuses. In older children the veins of the neck are practicable avenues. Recently, excellent results have been reported in children, particularly by Grulee, based upon the experiments of Siperstein and Sansby, through the use of intraperitoneal injections of citrated blood. Apparently the corpuscles promptly pass into the blood stream and function as in intravenous introduction.

Radiant energy probably deserves some mention in any discussion of the treatment of anemias. Radiation from the quartz mercury lamp and other sources of radiation have been shown to have definite effect upon the blood. In long exposure these rays appear to cause anemia. In lesser dosage a number of investigators have reported a stimulating effect upon blood production. Direct sunlight at least is usually available and the influence of heliotherapy in anemia certainly deserves attention and will doubtless receive further study.

What can we say of the efficiency of drugs in the treatment of anemia? The two drugs most commonly employed are arsenic and iron. Although widely used in various types of anemia for many years, there is reason to doubt whether arsenic has a direct effect upon blood genesis, maturation or hemoglobin formation. The view is generally accepted that arsenic has a stimulating effect upon metabolism in general and individuals suffering from secondary anemia of the type under discussion may be indirectly benefited. The most obvious pharmacological action of arsenic is its effect upon the capillaries, where dilatation is produced. This may well have an effect upon nutrition and metabolism The well known Fowler's solution has maintained its popularity for oral administration, while the combination of arsenic with cacodylic acid is usually favored for the hypodermic route.

Iron still maintains the position as the one

most useful drug in the treatment of the secondary anemias. In recent years doubt has arisen as to the beneficial effects of iron therapy. Although admittedly no panacea, both clinical experience and much experimental evidence support the view that iron has a very definite place in the treatment of the anemias. The following statements, briefly expressed, seem justified. Iron depletion occurs particularly in the anemias secondary to hemorrhage to defective diet or faulty assimilation. It does not occur characteristically in the hemolytic types of anemia, as in cases resulting from certain infections and toxemias. Here much of the iron is stored after the destruction of the red cell, particularly in the liver and spleen, and is there held available for hemoglobin formation. The total iron content of the body is small, but it may be remembered that a high caloric diet, particularly when largely composed of milk, butter and wheat flour, may not supply requisite amounts of iron for body requirements.

The inorganic preparations, those which have been used for years, such as ferrous carbonate, reduced iron, saccharated iron, appear to be more effective than any organic compound yet devised. Large doses sometimes produce results when small ones are ineffective. Iron is often not well borne by the stomach. For this reason and possibly others, hypodermic or intramuscular administration has a certain degree of popularity, the green citrate being usually employed.

Recent investigations, particularly those of Whipple and his co-workers, indicate that certain articles of food have a specific effect upon the efficiency of iron administration. Whipple found that not only liver and kidney, but other glandular organs, as well as fruits, such as apricots, peaches, raisins and apples, given to dogs rendered anemic by repeated bleeding greatly enhanced the action of the iron. These and other studies strongly indicate that we haven't by any means solved the problem of iron therapy.

It has been suggested that there is a radical in the hemoglobin molecule which cannot be built up in the body and this can be derived only from food. If the diet is deficient in such foods anemia results in spite of iron administration. The vitamins have been thought of as being directly concerned with the production and consequent cure of anemia, but this view is as yet unproven. In general it may be predicted that in the immediate future foods will receive far more attention in the problem of anemia than they have in the past.

REFERENCES.

Minot and Murphy: *Journal American Medical Association*, 87:470.

Minot, Murphy and Stetson: *American Journal of Medical Sciences*, 175:581.

Minot, Cohn, Murphy and Lawson: *American Journal Medical Sciences*, 175:599.

Ordway and Gorham: *Journal American Medical Association*, 91:925.

Cohn, Minot, Alles and Salter: *Journal Biological Chemistry*, 77:325.

Berglund, Watkins and Johnson: *Proceedings of Society for Experimental Biology and Medicine*, 25:814.

Berglund, Watkins and Johnson: *Ibid*, 25:835.

Doan, Charles A.: *Physiological Reviews*, 7:1-84.

Laurens, Henry: *Physiological Reviews*, 8:1-91.

Whipple, G. H.: *Journal American Medical Association*, 91:863.

Grulee, C. G.: *Southern Medical Journal*, 20:1.

SURGERY OF THE ANEMIAS.*

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The splendid papers already presented in this symposium on "The Anemias" leaves very little to discuss from a surgical standpoint in the treatment of these conditions. I think I can safely rule out of this discussion all those secondary anemias which are of chronic nature and due to specific causes, such as bleeding hemorrhoids, bleeding fibroids of the uterus, etc., and also include in this category purpura hemorrhagica for in this disease the anemia is always secondary and dependent upon the bleeding which is produced by some unknown cause.

Proceeding at once to the point, I think it is wise to say that specific surgery for the anemias must center around the spleen, and, therefore, I feel that the premises of this discussion should cover the following conditions:

1. Splenic anemia.
2. Hemolytic jaundice.
3. Gaucher's disease.
4. Pernicious anemia.

It is a fact that we frequently have a chronic type of anemia due to certain chronic infections in the spleen, but I feel that this belongs distinctly to a field covered by indications for splenectomy and not in this particular discussion.

Since the surgery of the anemic conditions

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mentioned above center around the spleen, it would seem appropriate that this paper cover some of the salient factors that relate to the removal of the spleen.

The role of the spleen in the human physiology is not known nor is its necessity demonstrated. This is the first premise in considering the indications for splenectomy. Surgeons should be honest enough to admit that, as far as their knowledge goes, the spleen appears to perform no function of sufficient importance to weigh against its removal. In contrast to the negative influence on the human from the removal of a normal spleen, the removal of a diseased spleen often provides a definite opportunity in certain conditions for improvement to the individual. Physiologists tell us that the normal spleen conveys about 30 per cent of the total blood of the body to the liver, and thus we can readily see the enormous pathological possibilities that must necessarily be inherent in a diseased spleen.

Most surgeons today are inclined to the belief that the spleen does not have the power or ability to initiate primary pathological processes but that the organ acts as an agent secondary to pathological processes initiated elsewhere; and that, therefore, when considering the normal function of the spleen we can readily see how, if this function is deranged, the pathological spleen may become a serious menace to the constituents of the blood and to the normal functions of the liver.

In order that the surgeon may formulate an intelligent opinion as to the necessity of splenectomy, it is important that what we know of the functions of the spleen should always be kept in mind. Speaking in a broad way, the main function of the spleen is shown in its effect on the blood, and this, briefly, may be noted under three headings: first, destructive action upon the red blood cells; second, a strainer or separator action by which organisms are removed from the blood stream and sent to the liver for destruction; third, the formation of lymphocytes. In considering the first of these functions, namely, destruction of the red blood cells, we immediately connect with splenectomy the three types of anemia,—hemolytic icterus (which is not a true anemia), pernicious anemia and splenic anemia.

I think I shall not be considered radical if I devote only a brief word to the consideration of splenectomy in pernicious anemia, for the operation in this disease does not appear to be based on sound reasoning and at the best promises only a remission of the symptoms for a brief period of time. When pernicious anemia has developed to the stage where the blood is characteristic it is an incurable disease, but splenectomy in some instances may offer a decided palliation. Many of these cases in the early stage do not show the characteristic symptoms of pernicious anemia; it is in these cases splenectomy offers the best hope for cure or considerable palliation. In elderly individuals the operation should never be considered, but in the middle-aged and young, if the disease is progressing rapidly and hemolysis is a marked symptom, splenectomy should be undertaken as a last resort.

Liver Diet

In the last two years the result of liver feeding in cases of pernicious anemia has made it seem justifiable to not only rule out the necessity of transfusion in these cases but also to make it thoroughly unwise for the surgeon to consider splenectomy. Accordingly, the above remarks relating to splenectomy are entirely academic, but this discussion on the surgery of the anemias would be incomplete without the presentation of the results relative to splenectomy in pernicious anemia which have preceded the advent of liver feeding.

In the consideration of splenectomy for splenic anemia, we find that the results are very much better in contrast to the failures of this operation in pernicious anemia. It is true that in splenic anemia we are not dealing with a definite clinical entity until possibly the last stages of the disease and the great difficulty in choosing the operation of splenectomy lies in adapting it to the clinical entity of splenic anemia. Most of the confusion arises in differentiating between portal cirrhosis or biliary cirrhosis, both carrying with them enlarged spleens, and the chronic form of splenic enlargement with a secondary anemia which characterizes the syndrome of splenic anemia. In splenic anemia unassociated with cirrhosis in any form, splenectomy has proven very favorable, resulting in about 60 per cent of cured cases. The results are not always immediately encouraging for often the anemia is exaggerated over a period of four to twelve weeks.

Gastric hemorrhage is not always relieved by splenectomy and the recurrence of gastro-

intestinal bleeding may follow. Some of these recurrences are often and extend over a long period of time, but usually they are rare and, if occurring at all, show themselves only a few times in the recent months following operation. The relief of the hemorrhage depends in part upon the condition of the liver and especially upon the amount of portal cirrhosis in the liver. Because of the large amount of blood carried through the spleen, the total circulation in the liver is relieved of a large portion of venous blood by splenectomy, but if there is considerable portal cirrhosis, with accompanying venous obstruction, associated varicosities of the esophagus or gastric mucous membrane, or superficial gastric erosions, we may readily understand how splenectomy cannot be expected to relieve the recurring hemorrhages in this type of case. It is well for us, therefore, to remember these contingencies in estimating the value of splenic removal for advanced pathological changes associated with splenic anemia.

There are two types of anemias occurring in childhood which are classified under the names of Gaucher's disease and von Jaksch's anemia. Both conditions seem to be clinically the same and the only differentiation is finding, in Gaucher's disease, the large vesicular cells which fill up the splenic sinuses. These two conditions in children simulate to some extent the splenic anemia of adults and it is well before passing from the subject of splenic anemia for us to consider the results of splenectomy for this condition in infancy and childhood. It would seem that most excellent results have been obtained even in the severe type of the disease in children, and I have been able to find reports covering seventy-two children under fourteen years of age who were splenectomized for splenic anemia with a resulting cure or marked improvement in thirty-six of the cases.

I believe that it is the general opinion of experienced surgeons today that splenectomy in children for the present should be reserved for the more severe type of cases. Improvement follows medical treatment in the milder types, but children with the more severe types usually die of some intercurrent infection unless operated upon before this infection occurs. The association of a biliary cirrhosis with a hemolytic icterus is a common condition, and this is probably due to the widespread destruction of the red corpuscles in the spleen, which in the broken down state are carried to the liver as blood pigments, and these in turn render the bile thick and viscid in character. Thus the flow of bile in the biliary portals is sluggish, so that congestion and inflammation around the bile passages readily occur with a disposition of fibrous tissue. The appearance of gall-stones associated with hemolytic icterus is very frequent and quoted by some authorities in about 70 per cent of their cases. We may thus see how easy it is to confuse the diagnosis of biliary cirrhosis, associated with gall-stones, and hemolytic icterus. On account of the exaggerated function or ability of the spleen to destroy the red blood corpuscles, which is so marked in the condition of hemolytic icterus, we can justly appreciate the reason for the excellent results that follow splenectomy in this condition, and splenectomy in hemolytic icterus is the operation of choice. There is no operation in surgery that is followed by more brilliant results than splenectomy for hemolytic icterus unless done in the terminal stage. It is only cases in the terminal stage, pathologically, with marked cirrhosis of the liver and secondary gall-stone formation that fail to be relieved by the operation. Care, however, should be exercised in not operating on these cases during a temporary exacerbation of their symptoms characterized by an increase of the jaundice, fever, marked tenderness and increase in the size of the spleen. These characteristic crises are usually temporary in character and operation should always be deferred until the decline of the more active symptoms.

In conclusion, I think it would be conservative to say that there is a definite field of usefulness for specific surgery in certain types of the anemias. It is, however, well to bear in mind that these are not primarily surgical conditions in which to exploit surgical efforts and that only through careful co-operation with an internist can the surgeon hope to properly select his cases for operation and at the same time escape many of the blunders of a too eager decision which has occurred so many times in the past, as recorded in the medical literature on splenectomies.

Medical Arts Building.

DISCUSSION OF PAPERS BY DRS. BECK, NOFSINGER, FLIPPIN AND PAYNE.

DR. F. C. RINKER, Norfolk, Va.: I am sure I express the feeling of everyone here when I say that I regret that Dr. Martin is not present and also that we regret his illness. He has probably had an opportunity, I am sure he has, to work up a discussion after rehearsing these papers. He has been particularly interested in the treatment of the anemias and in the separation of the secondary from the primary anemias, regarding therapy.

I am going to take up each paper. I have nothing, certainly, to discuss, but everything to sanction and agree with; but there are some points I think might well be stressed.

Dr. Beck's paper very well brought out the importance of determining hemoglobin in percentage rather than the reading of it on some standardized scale, and she told us of how much more value it is to determine hemoglobin in grams per 100 c.c. of blood than it is to make our standardized reading. I think we should also keep in mind the physiology, as described by Dr. Beck, when we are attempting to differentiate secondary from primary anemia. It is not always easy, but if we keep in mind a graphic description of the erythrogenic center I think we shall realize that in the center of a graphic drawing there would be the young cells and at the periphery the adult cells, and as the adult cells are called upon and destroyed, then the young cells are thrown into the circulation.

Dr. Nofsinger, in his paper on the symptomatology, gave us a very good classification. The only thing I wish to say here is that many of the hemolytic types are difficult to differentiate. I also wish to call attention to one pitfall that I think he overlooked, and that is the frequent mixing up of primary anemias (so-called pernicious anemia), with the aleukemic leukemias. Many times I think we have been at fault in making a diagnosis of primary anemia when dealing with this type of leukemia. He did not suggest some of the more severe neurological findings, such as paresthesias and the ataxias, which are found late in the disease.

Coming to discussion of Dr. Flippin's excellent paper, I simply wish to stress this point, that liver extract is definitely of value in primary anemia, and probably not valuable at all in secondary anemias. I might, however, say possibly instead of probably, because some of the secondary anemias will probably fall into the class that is amenable to treatment with liver. In my experience I have found that liver is of greater value than liver extracts. Dr. Flippin told us that we must be careful in our selection of liver extracts. This is important.

One important thing Dr. Flippin stressed is typing of the donor's blood immediately before it is used. I think probably sometimes we have used a donor ten days or two weeks later who typed perfectly during the first use of his blood; may be we have used that donor without retyping. There we have run a tremendous risk.

Dr. Payne has described the surgery of the anemias as well as it can be done. Splenic anemia and hemolytic icterus definitely fall into the class of surgical lesions. Gaucher's disease and von Jaksch's anemia probably fall into the surgical conditions, but he has said in his conclusions that these cases should be operated upon as soon as they are definitely determined to be surgical and not medical conditions. With this I heartily agree.

DR. SEALE HARRIS (invited guest), Birmingham, Ala.: The term "primary anemia" will have to be given up in discussing pernicious anemia, because it seems probable that pernicious anemia is secondary to some liver pathology. We think that it is secondary to a hepatitis that may have occurred years before the anemia developed and that the cause of pernicious anemia is a deficiency of an endocrin that controls erythrocytolysis. In other words, the equilibrium of five million red blood cells per cubic millimeter is maintained by the regular destruction of the red cells by the reticulo-endothelial cells, the Kupffer's cells that are in the liver and spleen and bone marrow. There is something that controls the action of those reticulo-endothelial cells. Perhaps the liver secretes this endocrin, and when the liver is diseased or those cells are destroyed or their action inhibited there is not enough of this inhibiting substance secreted and there is excessive destruction of red blood cells. If this were so, an excessive secretion of this antihemolytic endocrin would result in polycythemia; and Joslin states that in Strassburg, where pate de foie gras and liver sausages are manufactured, pernicious anemia is unknown, but polycythemia is frequent. In other words, the excessive ingestion of liver supplies too much of the endocrin that inhibits erythrocytolysis, and polycythemia results. In every case of pernicious anemia the essential pathological finding is of the liver, a previous hepatitis. Often there is an association of gall-bladder infections with the borderline anemias, and cholecystectomy improves or cures the anemias. Surgeons have observed that in the chronic cases of cholecystitis there is an associated hepatitis, and perhaps such cases are potential pernicious anemias, and the removal of the gall-bladder may prevent the development of the anemia. We think that there is strong evidence that pernicious anemia results from a deficient secretion of a liver endocrin and that therefore it is a secondary disease.

DR. W. LOWNDES PEPLE, *Richmond:* A young married woman of twenty-three was brought to me in March, 1928, complaining of enlarged spleen and anemia. It was thought that she had chronic malaria, and she had been treated extensively for it during the past eleven years, though she had never had chills and fevers and the parasites had never been found in her blood. She was transferred to the medical department for study. It was found that her mother and two of her sisters also had big spleens, were chronically anemic, and of yellowish complexion, though not frankly jaundiced. The patient herself was definitely jaundiced on admission, and the icterus index was 20. Her hemoglobin was 50 per cent with the Dare instrument, and the red blood cells were 2,600,000. The fragility test showed that her red blood cells were hemolyzed much more readily by hypotonic saline solution than are normal cells, and the reticulated red cells in the blood smear were 22 per cent. A diagnosis of familial hemolytic icterus was made. In addition to this condition it was found that she was about three months pregnant. It was decided to send her home for a month of rest in bed on iron, arsenic, and liver in an effort to build up her blood so the splenectomy might be done with less risk. She returned at the end of the month in worse condition than when previously seen. The hemoglobin had fallen to 40 per cent, and the bed blood cells to 2,200,000. It was decided that longer delay was useless, so on April 11th an abortion was done, and during the next two weeks the patient was put on large doses of liver extract and given three transfusions of whole blood of 500 c.c. each. Her blood count the morning of operation was hemoglobin 72 per cent,

red blood cells 4,000,000. A spleen was removed which weighed about 1500 grams, about ten times the size of a normal spleen. The patient reported three months later for check-up, and it was found that her hemoglobin was 78 per cent, red blood cells 4,600,000, the icterus index was only 5, both the direct and indirect Van den Berg gave negative reactions, and there was no urobilin in the urine. The fragility test was normal, and the reticulocytes in the blood smear were only 0.5 per cent. Clinically, the patient was an entirely different person and stated that she had felt better and stronger than she could ever remember having felt before.

Dr. William H. Higgins, Richmond: Among the complications of pernicious anemia I suppose the one that stands out with greater prominence is that of cord change, and although these changes are not exceedingly common probably all of us see from one to three or four every year as complications in this form of anemia. Unfortunately, there is no indication from the degree of anemia as to the likelihood of involvement of the cord, for there are instances where evidences of posterior lateral sclerosis have preceded other signs and symptoms of pernicious anemia. In other instances it has followed, indicating that neither one is the cause of the other but that probably both are caused by the same toxin that has gotten into the system. The pathology of advanced posterior lateral sclerosis is so definite that one studying sections of the cord of a person dying of the disease could see that any marked improvement would be very unlikely. The writings of Minot and Murphy and circulars sent out by Lilly with liver extract, state that no improvement is likely where there are these cord changes and also state that there are no instances where cord lesions have developed during the course of liver treatment. Only recently Dr. Rupert, of Baltimore, in *The Journal of the American Medical Association*, has cited one case that came to him with very definite signs of cord changes, with marked ataxia, necessitating the man's using two canes, and all the definite signs of a well marked sclerosis. After liver feeding for one year the man was able to walk and attend to all his duties and uses now only one cane, probably from habit rather than from real need, showing that we can hope in some cases for marked improvement.

Only recently another physician reported a case which in the course of the treatment of the disease developed marked signs of a posterior lateral sclerosis I should like to add to that a case which I saw in consultation with Dr. Fuller, in Danville here, about a year ago; a well marked case of pernicious anemia with a blood count, when we first saw him, of red blood cells 2,300,000 and hemoglobin of 30. He was started on liver extract, the blood improved rapidly, and he gained thirty pounds. He was still using liver. I saw him again last April, and while he had held his weight and his blood had shown no remission, yet he could walk only with the greatest difficulty. He was using two canes and had all the sensory signs of a cord lesion. I had a letter recently from Dr. Fuller saying the man was in bed and had lost sphincter control and had all the signs of the final stages of a sub-acute sclerosis. This was a rather remarkable instance of extreme cord changes occurring during the feeding of liver extract.

Dr. J. Powell Williams, Richmond: My experience has been entirely different from the results reported by Dr. Higgins and many others using liver therapy in the neurological lesions of pernicious anemia. I have had in the last eighteen months five cases of subacute combined degeneration, none of whom was able to walk at the time of admission to the hospital. One was the flaccid type with absent reflexes, just as in tabes dorsalis. The other four were of the spastic type with marked evidence of pyramidal tract involvement. There is not a single one of these cases who is unable to walk at the present time. The most recent one is using one cane; the other four walk without assistance. Two are farmers, and they have returned to nearly full-time work in the fields. They are forbidden to attempt the more difficult work, but are able to do a great deal. All of them show some evidence of their disease, such as positive Romberg and walking with a wide base. The vibration sense has not returned in any of them, though the pyramidal tract signs have disappeared in the four who showed them. Subjective sensation of numbness and tingling has been markedly reduced in all but is still present to a greater or lesser degree.

There is one thing that might account for the difference in the results I have gotten and those reported from the use of whole liver feeding. Patients having to take large amounts of liver every day over long periods of time usually become very tired of it, reduce the amount below that which is necessary for therapeutic results, and frequently stop it altogether. We have used liver extract in doses which were equivalent to one and three-quarters to two pounds daily. It can be given in palatable form between meals, so as not to interfere with the daily menu. It costs the patient nothing at the present time, which is a considerable attraction to the poor patients. We use the liver extract as bait to get the patients back for frequent observations and encouragement in the continuance of its use. Until definite improvement occurs they are seen every two weeks, and later the intervals are lengthened to once a month.

Dr. Higgins states that the lesion in the cord in this disease is a diffuse sclerosis from which little improvement can be expected. Long, James Collie, and Sir James Purves Stewart, along with all the more recent investigators, state that the distinguishing feature of this disease is the entire absence of that intense glial proliferation which characterizes all other chronic degenerative diseases of the spinal cord. The cord is not shrunken, as would be the case in sclerosis, but is a big, swollen, edematous cord. The lesion is essentially a degeneration with edema, and when you look at sections of the cord under the microscope, instead of seeing dense scar tissue in the diseased areas, it presents a honey-combed appearance where the nerve fibers of the white columns have undergone liquefaction. This appearance persists until death.

Of course, we have all been taught that regeneration does not take place in the cord; but, due to the pathological facts which I have stated above, i. e., absence of scar tissue formation and the persistence of the little holes in the white columns, it does not seem entirely impossible that, if the neuron from which the degenerated fiber springs is still alive and the pathological process can be checked by the use of liver extract, the axon might grow down into these little holes to its original distribution. As we know from our experience with anterior poliomyelitis, this regeneration takes a long time, so that observation over a number of years will be necessary to determine whether it actually takes place. Certainly we have not the right, according to my experience, to condemn these people to hopeless invalidism; but rather we can give them every assurance of marked improvement if the treatment is adhered to rigidly.

One point which should be stressed is illustrated by a patient with the flaccid type of ataxia. She had improved markedly on liver feeding, after four years of repeated relapses and transfusions. Her improvement had been so marked that she refused to take the liver or liver extract any longer, though she was cautioned about the possibility of the development of grave neurological symptoms. Eight months later she reported to the hospital, supported on one side by her chauffeur and on the other by a maid, utterly unable to walk without their assistance. Her hemoglobin at this time was 78 per cent and her red blood count was 4,800,000, but even though the blood picture had remained normal, the neurological lesion had progressed to an extreme degree. Her improvement on large doses of the extract was marked and rapid; and she is now able, after six weeks, to climb steps and go about wherever she pleases with the use of a cane. I think this case brings out strongly the fact that in spite of a complete remission in the blood condition, liver therapy should be continued without any break; don't let them stop at all, because these cord lesions, as one of the essayists has said, are the most serious aspect of the disease and should be guarded against rigidly.

Dr. Beverley R. Tucker, Richmond: I should like to say, very briefly, that our experience has coincided in the cord cases with that of Dr. Williams. We treat a certain number of these cases but see many more in consultation than we actually treat. I think undoubtedly in the early stages and even in the medium stages the cord changes are purely toxic and absolute recovery may take place. They begin, as a rule, with numbness and tingling, and those cases can get well if treatment is persisted in. The surprising thing is not that they go into chronic invalidism but that under active and persistent treatment these cases may get well or may make a practical recovery. Of course, in long standing cases, where toxemia has existed for a length of time, degeneration has taken place; and I suppose nobody but God can replace degenerated nerve tissue. I think one of the best things the liver treatment has done is that it helps the prognosis in some of these cases. In the beginning cases and even medium cases, absolute recovery is possible.

Dr. R. Finley Gayle, Richmond: The cord changes following pernicious anemia have been mentioned by several, and for that reason I shall not attempt to discuss them here.

There is one central nervous change that has not been touched upon, and that is the cerebral changes accompanying not only the primary anemias but the secondary ones. We see some of these cases which have marked psychoses; some of them are of the manic depressive type, some of apparent intellectual deterioration, and some with emotional instability. Others have various degrees and types of aphasia. We now have one case under treatment who has a marked aphasia with a secondary anemia, and it is our opinion that the anemia has much to do with the aphasia.

Dr. T. Dewey Davis, Richmond: I am sorry that I missed the first two papers in this symposium, but I was very much interested in Dr. Flippin's paper on the medical treatment. Of course, the value of liver extract and of the feeding of whole liver has been thoroughly established, but there is considerable doubt in the minds of certain individuals as to whether this is the whole story in the treatment of pernicious anemia. Dr. Means, of Boston, in discussing the etiology, recently stated that he believes the lack of hydrochloric acid in the stomach probably has something to do with the development of the anemia, in this respect—that something happens or something does not happen in the digestion of the food as the result of the lack of hydrochloric acid, and this something plays a part in the development of the anemia. There are some men who believe that the giving of hydrochloric acid in pernicious anemia along with liver extract helps to prevent the cord changes and, not only that, helps to cure them after they have developed. I can recall three individuals with marked cord changes who were treated before the days of liver feeding. The principal part of their treatment was hydrochloric acid in doses of three to six drams a day, and all showed striking improvement in the cord symptoms. We cannot say positively that the liver extract has any specific effect on the cord changes, because we know the cord lesions will get well sometimes without the liver extract, and sometimes with the liver extract or whatever else you do there is no improvement in the cord changes. So I want to make a plea not to entirely disregard hydrochloric acid in the treatment of pernicious anemia. Not only does it in some cases aid the digestion, but I believe it is particularly of value in helping the cord symptoms.

Dr. J. C. Flippin, University, closing the discussion: In commenting upon the rather striking unanimity of experience and results of liver therapy in pernicious anemias. I did not mean to infer that our information in this field is by any means complete. This and other recent work on the anemias open a most interesting and fruitful field for further thought and investigation.

In the University Hospital in the past few months, we have been using a liver portion prepared under the supervision of Dr. Porter and his associates of the Medical College of Virginia. Thus far we have found this preparation entirely satisfactory in its therapeutic effects, and apparently quite as active as the Eli Lilly extract. As yet, I believe Dr. Porter and his co-workers have made no announcements with reference to their investigations, indicating a commendable attitude of conservatism on their part.

THE HIGH OBSTETRICAL DEATH RATE WITH SUGGESTIONS AS TO ITS CURE.*

By GREER BAUGHMAN, M. D., F. A. C. S., Richmond, Va.
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Motherhood is one of the most important functions of woman. It should add to her happiness, broaden her usefulness and at least not interfere with her health.

We find unfortunately in the State of Virginia that deliveries are declining. There were 3,374 more women delivered in 1925 than 1926. Of this number the whites were lower by 2,262 and the colored by 1,112. In 1927 as compared with 1925 the difference was not so great but still significant. The total reduction, comparing 1927 with 1925, was 3,237, with a white reduction of 1,826 and a colored reduction of 1,401.

*Read before the fifty-ninth annual meeting of the Medical Society of Virginia, in Danville, Va., October 16-18, 1928.

With such figures before us, I think we are justified in stating that an increasing number of married women are refusing to become pregnant or if they do become pregnant are being interfered with. There were ten more white marriages in 1926 than in 1925 but 120 less colored marriages.

No one cause can be singled out as the true reason for the reduction in the birth rate. The main reasons might be found under the following (a) economic, (b) better jobs for women, (c) better education for women, (d) style, (e) a lessening of church and moral teaching, (f) fear of pain, (g) fear of morbidity, (h) fear of death, (i) spread of propaganda on birth control.

We will discuss briefly the three causes that seem to come within the province of the doctor.

I doubt that the fear of pain is a very deep seated cause. Those of my patients who discuss pain with me are the ones that have been dominated by a mother or grandmother, who were delivered before the doctors began to use the most painless methods of delivery.

The fear of morbidity and death are real. Are we doing all that we can to remove these two monsters from the path of the pregnant woman?

The study of morbidity is very complicated. It undoubtedly parallels the death rate so for the purposes of this paper we will discuss mortality.

The completed statistics for the United States as a whole are not available since 1926. During 1926, in the registration area of the United States the puerperal mortality rate reached the enormous number of 14,800—8,037 urban and 6,763 rural. During that same period Virginia with a population of 2,519.000 had 411 puerperal deaths, making 8 per thousand of births. This was thirty-three more than in 1925 in spite of the fact that there were 3,374 fewer babies born. Statistics show that 1926 had the highest obstetrical death rate since 1920.

Fortunately, the death rate declined in 1927. There were, in 1927, 364 puerperal deaths in Virginia, ninety-seven less than in 1926, with forty-seven more deliveries. This gives Virginia in 1927 a death rate of 6.3 per thousand compared with 8 per thousand in 1926, and the lowest death rate since 1912. The rate for sepsis was practically the same as it has been for many years but the rate for eclampsia was 1.7, being the lowest reported by 1 per thousand since 1912.

Either the State of Virginia or the committee for the study of the midwife problem in Virginia is lucky. This committee was appointed by your former President, Dr. J. Shelton Horsley, in the early part of 1927, to study the midwife problem. The committee enlarged its duties to include the study of deaths from the puerperal state and worked out a plan for reducing them. The State was lucky if what the committee did helped to reduce the puerperal mortality, while the committee was lucky, starting to work when it did, if the mortality was on the way down any how.

How may we cure the high puerperal mortality rate?

Fortunately, the greater number of puerperal deaths may be classified under two general heads—sepsis and eclampsia, as it is generally called, but more properly toxemia of pregnancy. If we can put these two great monsters that beset the path of pregnant women to rout, then we will be justified in claiming a great victory.

The death rate of the toxemias can be reduced to the vanishing point if we can prevent the toxic woman from having convulsions. We can prevent both toxemia and convulsions by prenatal care. This fact is as well known by the medical profession as that guarding the water supply and swatting flies will prevent typhoid.

If the public was as well informed about the prevention of toxemia of pregnancy as they are about the prevention of typhoid, then the mortality of the pregnant state would be greatly reduced.

Your committee has deemed it wise to indicate to the doctors of the state by letter, pamphlet, and by the reading of papers from time to time, that the line of attack against the high death rate from eclampsia is to stress prenatal care and to try to have all pregnant women see a doctor.

After the doctors of the state have learned of our plan we hope to tell the public the dangers of toxemia and sepsis too for that matter and to insist that the way to prevent them is to visit their family doctors at stated intervals for an examination, urinalysis, blood pressure reading and advice.

We have already instructed the county nurses to try to have the women who intend

to be delivered by midwives make at least one visit to the doctor of their choice or some near-by clinic for a similar examination.

We bespeak an interest and hearty co-operation on your part in this plan for the reduction of maternal mortality in the State of Virginia.

It is with pride that we point to the reduction of the eclamptic deaths by one whole point in 1,000 since we have been carrying on this propaganda. It is you and your co-operation that has reduced the eclamptic death rate. The committee is merely the noise that is scaring the women into your offices.

The reduction of the toxic death rate is comparatively easy. Any doctor who will devote time enough to his cases to make them come to him for examination, examine their urine, blood pressure and, in the event of trouble, outline a plan of diet and simple treatment coupled with the induction of premature labor when the case is not improving under the plans that he has mapped out, will reduce the number of cases of convulsions that he has in his own cases to two or three in his whole life time of practice.

The reduction of the sepsis death rate is a much more difficult problem. Your committee does not expect to make any sensational reduction in the sepsis incidence or death rate.

The mis^t of the baby and pelvis, depending as it does upon the size of the baby, the size of the pelvis, the ability of the head to mould, tend to an early break of the bag of waters, necessitating frequent vaginal or rectal examinations to determine progress; and finally operative intervention is one of the most common predisposing causes of sepsis even in hospitals where examinations can be made under the most favorable conditions. Prolonged labor due to the above named cause coupled often with a rigid cervix due to old scar tissue is a very common cause of opportunity for infection. The lighting up of old infections, particularly gonorrhea, as a result of the mechanics of labor is a very common sight, particularly on the charity wards. Cross infections carried from one case to another by nurses or doctors are common. The traumatized cervix and perineum in even the most skillful hands is often the starting point of serious infection and death.

These and many other perfectly obvious predisposing causes of sepsis in hospital labors are a sufficient problem to handle. When we add to these the poor home surroundings, the even poorer care that the home delivery has, and any carelessness upon the part of the doctor in his examination, the problem grows to enormous proportions.

Prenatal care is in sepsis prevention an answer as well as in toxemia prevention. Unfortunately it gives only a partial answer.

A careful pelvimetry at the preliminary examination of the patient coupled with what is more important, a manual mapping out of the pelvis during the vaginal examination, will give a comparatively true picture of the probable outcome of labor. If to this primary examination is coupled a mapping out of the baby's progressive size by abdominal palpation, foetometry, and finally an X-ray examination, then we are in position to know what the outcome of the labor should be, and prepare for trouble.

A thorough knowledge of the case ahead of time almost precludes the necessity of vaginal examinations. I believe in vaginal examinations but they should be made many weeks before labor starts.

Unfortunately, the handling of a case as outlined is almost impossible for the busy general practitioner. It includes more training in accurate pelvimetry, vaginal mapping of pelvis, foetometry, etc., than we are able to give except in the most rudimentary way at the medical schools to the average medical student. Such a knowledge as he should have is predicated upon the careful examination and following of many hundred cases. Fortunately, the trend of the times in medical education is to give more hours to obstetrics.

Another part of the preventive work has to do with a clean delivery, a very clean delivery, a scrupulously clean delivery, a sterile delivery. This includes an absence of vaginal examinations at delivery and the reduction of rectal examinations to the minimum.

If in addition to the above we are able to practice and teach a God-like judgment as to the time, and to the method of interference, we would indeed drive sepsis out of our midst.

Discussion.

Dr. P. W. Miles, Danville: It seems to me that the obstetrical death rate in Virginia is entirely too high. Dr. Baughman did not tell us anything about the infantile deaths connected with it, for the large percentage of mothers losing their lives at that time means two lives, not only because of the death of the mother, but many of these children die in the first four to six days of life from lack of mother

care, I should say. The committee has worked hard to try to find some plan by which it could reduce this death rate. Better education of the laymen seems to be the greatest point that we could find for the present. I think the doctors are possibly doing everything it is possible for them to do, but they are practically almost helpless without the co-operation of the laymen. Strange as it might seem, there are many of these women in our cities and towns, and especially in industrial villages, that receive no prenatal care whatsoever. What we are going to do about it nobody knows, but it seems if we could educate the laymen even to the fear of death—that is, to the point where they know of the dangers of mortality and morbidity—we might accomplish something. How to bring about that education is hard to say. Possibly through the public health service, and by their publicity every pregnant woman will know something about the necessity of prenatal care and will go to some doctor for examination. I think this is a case where neighborhood gossip might be a virtue; women talking to each other will become impressed with the necessity of prenatal care and will go to a doctor to be examined.

Dr. Robert P. Kelly, Lynchburg: I cannot add anything to what Dr. Baughman has said, but I do want to thank him for this excellent paper, which I think is one of the best I have ever heard on the subject. One thing he mentioned which I should like to emphasize is rectal examination. I feel that most of us can learn, with a little practice, to conduct these cases by rectal examination, making absolutely unnecessary vaginal examination, which is, of course, the worst thing we can do if we want to avoid infection. By rectal examination I think at least half of the sepsis cases could be prevented. My personal experience has been that most of the deaths I have seen, in the last five or six years, have been cases which have been badly handled in the second stage of labor. One or two of those deaths, when I saw the patient, were practically inevitable; the patients were almost dead when I saw them.

That leads me to another thing I want to emphasize, and that is calling for a consultation when in trouble or in doubt. I think there is not enough co-operation between the general practitioners and the men who pretend to specialize.

Another thing I should like to emphasize in the reduction of maternal mortality and infant mortality is the treatment of abortions. Of course, we all know that criminal abortions will frequently cause maternal mortality; but I think we often overlook the fact that spontaneous abortions will often result in infection and death, due to examinations, etc. As a rule, spontaneous abortion cases should not be examined within the first two or three months of pregnancy. Most of those cases will take care of themselves. I think the best way to treat such cases is to leave them alone for at least a week or more; then finally, if they do not clear up, I think it might be advisable to empty the uterus, but not curet them, not scrape them.

Dr. Percy Harris, Scottsville: I do not believe the imputation of the high mortality rate to the doctor is absolutely just. For instance, an obstetrician gets a high mortality rate because he gets the most complicated cases. Then the high mortality rate of the general practitioner is due to the incompetency of the midwife. If a woman has toxemia, a midwife knows nothing about albuminuria. It seems to me that in protection to the midwife as well as to the doctor, the midwife should be instructed, and when a midwife takes charge of a case the patient should be told to go to see a physician. If midwives are going to be licensed and turned loose on the public, they should first be properly taught. In the majority of cases of death of the mother, the doctor signs the death certificate, thus getting an increased mortality rate which he is not justly entitled to; because, as I say, the obstetrician will sign the death certificate in the most complicated cases referred to him by the general practitioner, and the doctor will sign the death certificate in the cases sent to him by the midwife. I should like to see the midwife educated so that she will call in a physician in any unusual or complicated case and do it before it is too late.

Dr. Baughman, closing the discussion: I am going to say just one word. This paper of mine is not scientific; it is propaganda to help in the reduction of maternal and infant mortality. I promise you that your committee is going to do the best it can to reduce the death rate of mothers and infants. The committee is working absolutely along the doctor's lines, because we believe if you do not know a little more about how to prevent deaths you are right poor doctors, and we think you are right good doctors. We believe if we can get pregnant women to see you at least one time, particularly the ones the midwife will deliver, you can do something towards helping to lower the death rate; but if you do not see the case until she is nearly dead, then, of course, you can not. That is the theory on which we are going, and I hope we are going to have your heartiest co-operation. When you hear from us, perhaps over the radio, say to yourself: "Those fellows are trying to do the right thing to reduce the high mortality in obstetrics in the State of Virginia."

SOME OBSERVATIONS ON THE DYSPEPSIA ASSOCIATED WITH GALL-BLADDER DISEASE.*

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and
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While chronic cholecystitis and cholelithiasis frequently give rise to characteristic acute attacks pointing directly to the presence of these affections, there are many instances in which, due to atypical manifestations, the correct diagnosis becomes impossible. It not uncommonly happens that many of these cases present histories of dyspepsia of a rather chronic though mild type with an absence of the acute attacks of colic and jaundice without other direct evidence of gall-bladder involvement.

In an interesting publication Graham[1] has presented a detailed description of the chronic type of gall-bladder dyspepsia in which he urges the importance of obtaining in each instance a detailed history in addition to the usual clinical investigation in order to arrive

*Read at the meeting of the Baltimore City Medical Society, October 19, 1928.

at a correct conclusion. He points to the discomfort occurring soon after meals and radiating into the back, especially toward the right shoulder, and the history of acute attacks of indigestion as evidence of this type of gall-bladder disease. Blackford and Dwyer[2] have more recently called attention to this condition. They describe two clinical types of this disease.

(1) Attacks of gall-stone colic continuing for years and then the gradual onset of chronic dyspepsia; and (2) chronic dyspepsia with milder attacks of acute indigestion and often followed by biliary colic.

According to our experience the presence of gall-bladder dyspepsia may ordinarily be suspected if a thorough clinical history is obtained. Not infrequently the patient will be reminded of attacks of early acute abdominal pains some of which may have perhaps required anodynes for relief, and some may have been accompanied at times with jaundice or will present histories of early infections such as typhoid fever. Preceding or following such attacks, dyspepsia of a chronic though milder type has been noted with periods of relief extending over months or even years. The dyspeptic symptoms manifested are fullness, weight and distention following meals, though at times without relation to food, which may or may not be accompanied by discomfort in the epigastrium and under the right costal arch. These symptoms are frequently relieved by eructations or by means of carminatives. It is not uncommon for these paroxysms to occur just upon retiring, causing such distress as to require the patient to sit erect in bed for hours, producing forcible efforts at eructations. Pain is often noted following meals, extending around the upper abdomen, especially in the region of the right hypochondrium. It may occur in the form of the hunger type, reaching its greatest intensity three or four hours following meals, though this is not constant, and relief is ordinarily not always afforded by means of food or alkalies. Indigestible food is apt to aggravate this condition. Tenderness on pressure in the region of the gall-bladder is not uncommon though this sign is by no means constant. Nausea and vomiting occur at times. These symptoms are ordinarily not severe and may continue on for years, often with periods of relief following careful dieting or medical treatment, recurring at irregular intervals for shorter or longer periods, especially following indiscretions in diet or upon over-exertion.

While these forms of gall-bladder infections are ordinarily diagnosed without difficulty by the history of acute attacks as well as by the tenderness elicited under the right costal arch, notwithstanding the rather indefinite gastric symptomatology, other forms of cholecystitis occur in which the diagnosis is very uncertain and obscure.

In this group are the cases classified under the term biliousness. These patients are sallow in appearance, weak, affected with indigestion and constipation, and are the subjects of sick headaches and migraine attacks, with temporary slight enlargement of the liver. In many of such cases severe types of biliary stasis with chronic cholecystitis exist due to the presence of an atonic, infected gall-bladder.

In certain affections of the gall-bladder, notably in cholecystitis and cholelithiasis, pyloro-spasm is produced, resulting in epigastric pain with symptoms of hyperacidity. The condition may in consequence simulate gastric or duodenal ulcer or chronic appendicitis and, on this account, the diagnosis may thus be rendered extremely doubtful. Further, difficulty may also arise by the possibility of the two conditions being present in the same patient. In some cases dysphagia is a prominent symptom, due to reflex spasm at the cardia.

In another group of cases no history of severe attacks is presented, but only a grumbling gnawing sensation relieved by food and by alkalies with an associated hyperacidity.

In still a further type a septic temperature is observed of a greater or lesser severity with slight gastric disturbance or pain. The temperature may continue on with morning remissions and an evening rise for a considerable period of time until perhaps the true condition is revealed by a sudden onset of an acute attack of gall-bladder colic.

Finally, in another type which markedly simulates angina pectoris or coronary thrombosis, pain is noted in the precordium, radiating into the arm. There is often present in these cases considerable gaseous distention of the stomach with eructations not uncommonly of the aerophagic type. In consequence, such

patients are not infrequently treated for angina pectoris until an enlargement of the liver with tenderness under the right costal arch and, perhaps a mild increase in temperature will point out the true nature of the affection. In a considerable number of instances of this type, gall-bladder operation is followed by complete recovery. In many of the obscure cases of cholecystitis accompanied with gastric dyspepsia in which the diagnosis remains doubtful, the correct solution may be arrived at by means of X-ray examinations. The roentgen-ray indications of gall-bladder infections are revealed by the presence of adhesions dragging the stomach and duodenum over into the direction of the gall-bladder. The adhesions, however, need not necessarily extend from the stomach and duodenum, but may arise directly from the gall-bladder itself extending to various parts of the intestinal tract and are apt to produce varying degrees of stasis, retention and even obstruction according to their extent, and thus give us a definite picture in the plates as to the chronicity of the gall-bladder disturbance. Frequently this condition is associated with a filling defect in the duodenum and a deformity of the duodenal cap. When that condition arises, it is often extremely difficult to determine whether we are dealing with a primary gall-bladder or duodenal disease.

The demonstration of gall-stones by the roentgen-ray has proven of value in a certain percentage of cases depending largely upon the amount of calcium salts present in the stones. Gall-stones composed entirely of pure cholesterin are practically invisible to the ray on the plain plates, or when barium meals are employed. It is difficult to give percentages, as they vary so markedly according to the type of case and the operator that figures would be misleading. Visualization of gall-stones occurs, however, in probably less than 25 per cent of the cases. With improved technic, it is now possible to visualize the gall-bladder shadow even though gall-stones are absent, and it is ordinarily conceded that a gall-bladder that can be seen is diseased, i. e., containing either soft calculi, thickened bile or consisting of a hypertrophied wall. One must remember, however, that a negative diagnosis does not necessarily rule out gall-stones.

Finally, by means of the recent method of Graham and Cole[3], we have been enabled to visualize the gall-bladder. By injecting calcium tetrabromphenolphthalein intravenously these investigators were able to clearly visualize this organ in normal individuals. On account of the serious reactions which sometimes followed the intravenous injection of the dye, the oral method has been found more satisfactory, and an office routine similar to the opaque meal in gastro-intestinal investigations has been made possible. The technic we[4] have used has been briefly as follows: Five grains of sodium tetraiodophenolphthalein in enteric coated pills or capsules are given for every ten pounds of body weight. One-half of the total dose is given with a light supper at 6 P. M., and, beginning two hours later, the remainder of the pills are given, two every fifteen minutes until all are consumed. The patient returns sixteen hours later for the X-ray examination. If stone shadows are found, or, if the gall-bladder is not visualized at this period, a positive diagnosis of gall-bladder disease is made. If the gall-bladder is filled, the patient is fluoroscoped for mobility and tender areas and requested to return one hour after eating a fatty meal.

Inasmuch as jaundice is observed only in a small proportion of instances following atypical gall-stone attacks, one cannot depend entirely upon this sign as an evidence of gall-bladder disease. However, since bilirubin is frequently increased in the blood following such attacks, the determination of latent jaundice in the blood by means of the Van den Bergh reaction or by the icterus index of Bernheim may be of considerable diagnostic help. The normal range, according to the Bernheim method, is between two and five and the index in clinical icterus is over fifteen. Latent jaundice is indicated by figures between six and fifteen.

As a further aid in the diagnosis of obscure forms of dyspepsia due to gall-bladder infections, the Lyon-Meltzer method of biliary drainage frequently presents considerable direct evidence. The diagnosis is developed, according to Lyon, around the direct study of the bile and the manner of its discharge, on the gross appearances of the specimens obtained, the quantity, color, consistency, viscosity, transparency, turbidity, flocculations, mucus, etc.; the cytological examination—epithelium, whether bile stained, its source, pus

cells, crystals, concretions, red blood corpuscles, inflammatory debris, mucus, bacteria; the chemistry—lecithin, cholesterin, calcium, pigments, effervescence on acidification, etc.; and by the bacteriology, as by culturation of samples of the bile. Failure to obtain gall-bladder bile after stimulation with magnesium sulphate indicates complete obstruction of the cystic duct, either due to stones, adhesions, or pressure from without by a tumor. Failure to obtain the clear lemon yellow bile or common duct bile is indicative of common duct obstruction. Of course, neither gall-bladder nor common duct bile is obtained when the common duct is obstructed. In these cases it is interesting to note that frequently by means of analysis of the duodenal contents, the pancreatic ferments are markedly diminished or absent. A mucoid discharge, bile tinged with flakes of red blood corpuscles, followed by a thin watery discharge, has been frequently observed by us in cases of partial obstruction of the common duct, while an excess of gall-bladder bile, that is over 90 c.c., is indicative of gall-bladder stasis. A diagnostic measure, which we have observed in a fair proportion of cases and which is of considerable value, is the pain produced immediately upon the introduction of the magnesium sulphate solution, which is much like a mild gall-bladder attack and is analogous to the pain occurring in cases of strictured ureters, or in Dietl's crises when fluids are instilled into the pelvis of the kidney. Inspissated mucus or tarry bile, extreme atony or atrophy of the gall-bladder, absence of bile in the gall-bladder, the contents consisting of calculi only, are other conditions in which the recovery of bile may be impossible even after stimulation.

In certain obscure forms of gall-bladder dyspepsia this method of non-surgical biliary drainage has, therefore, presented us with a valuable means of diagnosis. It is particularly valuable in that it enables us to diagnose these conditions early before evidence of complications have manifested themselves.

According to our experience achylia gastrica is present in from 20 to 25 per cent of these cases, while in from 25 to 30 per cent hyperacidity is observed. The association of achylia with pain or discomfort is rather indicative of organic disease, so that this finding may be of some value in diagnosis in certain obscure cases of gall-bladder dyspepsia.

In conclusion, it is evident that there are various types of gall-bladder dyspepsia in which the typical manifestations of this affection are absent and in which the diagnosis remains extremely obscure. In many of these instances a history of former acute attacks of upper abdominal pain may aid in arriving at correct conclusions. In some cases the diagnosis may, however, be cleared up by means of roentgen-ray examinations, while in others help may be obtained by means of duodenal drainage studies, the icterus index and the Van den Bergh reaction. There still exists, however, a small, but nevertheless, definite group of cases in which the diagnosis remains so obscure that only after prolonged clinical observation or even surgical intervention can a correct conclusion be reached.

The following brief histories present some of the unusual types of gall-bladder dyspepsia:

Case 1.—Case of cholelithiasis quiescent for a period of four years and then followed by symptoms of chronic dyspepsia.

A. T., male, aged 54 years, had had the usual diseases of childhood. At 22 he passed through a rather severe attack of typhoid fever which lasted about eight weeks. His convalescence presented nothing unusual and he remained in good health until about four years ago when he was suddenly attacked with severe pain in the upper right quadrant of the abdomen radiating to the back between the shoulder blades; accompanying this attack, chills, fever and sweats were noted and, on the following day, jaundice. This condition gradually subsided and after a week the patient had no further discomfort and appeared perfectly well. He continued in good health for four years, when indigestion of a rather severe type manifested itself. This consisted of fullness and distention and, occasionally, of pain following meals. These symptoms were often relieved by eructations and not infrequently recurred at night after retiring.

On physical examination, no abnormalities were detected with the exception of a slight tenderness noted occasionally under the right costal arch. An X-ray examination revealed distinct shadows of stones in the gall-bladder region. At operation a much enlarged gall-bladder, containing numerous stones, was found. The patient made an uneventful recov-

ery, and has since remained well and free from all dyspeptic symptoms.

Case 2.—Case of chronic dyspepsia, associated with attacks of acute indigestion, followed subsequently by typical attacks of biliary colic.

J. K., female, aged 39 years, had not been affected with any infectious disease with the exception of the usual ones observed in childhood, until at the age of 21 years, when she was the subject of a very severe attack of influenza, and passed through a prolonged course of chest involvement (broncho-pneumonia). At the age of 27 without evident cause she began to suffer with dyspepsia. There was present pressure and fullness following meals and occasionally pain, rarely nausea and vomiting. Attacks of indigestion would occur occasionally at night with pain in the epigastrium radiating toward the back, which were relieved by the frequent administration of soda in hot water. With the exception of a period of a month or two of relief at various times, the dyspepsia persisted for three years. Suddenly one night an acute attack of pain manifested itself, which radiated under the right costal arch into the back, and which required a hypodermic injection of morphia for relief. The attack was followed, after the second day, by jaundice which persisted for about a week. From now on the acute attacks increased in frequency so that operation was advised, at which time several stones were removed from the gall-bladder and common duct. This procedure afforded entire relief.

Case 3.—Patient affected with frequent bilious attacks; recovery following a course of non-surgical biliary drainages.

P. B., female, age 26 years, had frequent bilious attacks occurring at least twice each month in the form of sick headaches, nausea, vomiting of bile, followed frequently by a slight jaundice. These attacks persisted for from one to three days. Physical examination at this period revealed a definite enlargement of the liver with exquisite tenderness under the right costal arch. Non-surgical biliary drainages presented bile of a turbid type filled with mucus, pus cells and cholesterin crystals. Following a prolonged course of duodenal drainages, the symptoms gradually disappeared and the patient has now been relieved of all attacks for a period of several years.

Case 4.—Case simulating gastric ulcer, subsequently observed to be cholelithiasis.

P. F., male, aged 63 years, was affected with symptoms pointing to ulcer for years and had undergone numerous ulcer treatments with periods of apparent relief. The last attack was more severe, however, than all others and persisted for two months. The patient presented the usual signs of ulceration with attacks of pain appearing some time following meals, which were relieved by the ingestion of food as well as by alkalies. The gastric analysis revealed a hyperacidity, and the X-ray showed a large defect at the pylorus, which was interpreted as an ulcer with the possibility of beginning malignancy. At exploratory operation, the gall-bladder was observed much enlarged and filled with stones, and the defect noted in the X-ray plates was found to be produced by the pressure of the enlarged gall-bladder upon the stomach.

Case 5.—Patient presenting but little pain or other signs pointing to cholecystitis with the exception of a septic temperature.

J. C. McK., aged 46 years, had had the usual diseases of childhood, but otherwise enjoyed good health until four years ago. Without any obvious cause he began to show an evening rise of temperature, often as high as 101°, with morning remission to normal or below. This condition has continued ever since and, in addition, there has been a progressive loss in flesh, strength and energy, with indigestion in the form of acidity, eructations and flatulency.

On examination but few abnormalities could be detected with the exception of the evening rise in temperature. The thoracic organs were found to be normal and the abdomen soft; there was, however, a slight enlargement of the liver, and tendeness on pressure beneath the right costal arch. The blood pictures revealed a leucocystosis of 12,000 with 80 per cent of polymorphonuclear leucocytes. Biliary drainages revealed turbid specimens of bile filled with mucus and cholesterin crystals. Cholecystitis was suspected and operation advised. A much thickened gall-bladder containing dark inspissated bile, infected with colon bacilli, was removed. The evening rise of temperature soon disappeared and the patient has since remained well.

Case 6.—Case of cholelithiasis simulating angina pectoris.

Mrs. S. G., aged 35 years, was in good health until six months ago; since then there have

been attacks of precordial pain appearing mainly on exertion, though recently these have occurred at night, awakening the patient after sleeping quietly for several hours. These pains radiate down the left arm and are occasionally of sufficient severity to require opiates for relief. At times the pain has radiated to the abdomen. On physical examination the heart was found normal, and the blood pressure registered 140/80. The liver was slightly enlarged, and there was a distinct tenderness under the right costal arch. Several attacks were observed, which, though simulating those of angina pectoris, were of so mild a type as to give the impression that we were not dealing with true anginal attacks. During one attack the pain extended into the abdomen under the right costal arch, and around to the right shoulder blade. On the following day a slight icterus was observed. Operation was advised and a gall-bladder filled with numerous small mulberry stones was removed. The patient has had no further attacks.

REFERENCES.

1. Graham. *Colorado Med.*, Feb., 1918; 15:34.
2. Blackford and Dwyer. *Jour. Amer. Med. Assn.*, Aug. 9, 1924; 83:6, 412.
3. Graham, E. A., and Cole, W. H. *Jour. Amer. Med. Assn.*, Feb., 1924, LXXXII, 613. Also Diseases of the Gall-Bladder and Bile Ducts, Lea and Febiger, 1928, page 279.
4. Morrison and Feldman. Annals of Clinical Medicine, Oct., 1926; 5:4, 330.

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STERILITY IN WOMEN.*

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The subject of sterility is one of the most important and most interesting that engages the attention of the gynecologist. In the search for a cause of a sterile union there are a number of problems in both partners that must be considered. That at least 25 per cent of the sterile unions are due to the male is a fact apt to be overlooked. The majority of the women coming for sterility take it for granted that the cause lies with them, especially when the husband is a strong, healthy man.

It is not within the scope of this paper to deal with all the male defects that may cause sterility, but it is the duty of the gynecologist to determine the presence or absence of spermatozoa, their number, their vitality, and their morphology. This preliminary study is best made of a condom specimen, freshly obtained. Though there are instances of oligospermia, where conception easily takes place, it is a cause for relative sterility; with a less fertile female conception would probably not occur. Moench has made some interesting observations on the morphology of the human spermatozoa, and is of the opinion that male fertility bears a definite ratio to the percentage of normal sperm cells. This, also, has received a great deal of attention in veterinary practice, where it has been possible from a study of the sperm of bulls to determine their fertility.

Evans, in a study of fecundity in rats, has made some interesting observations. He has estimated, for different rats, their fertility index, and has found that when the indices of the male and female are multiplied and give a product of over sixty, the union would be followed by conception, and when less, the percentage fell off in a ratio that bore close resemblance to the diminishing values of the product. For example, male and female rats with an index of eighty each would bear offspring, while a male with an index of 100 and a female with thirty would have a sterile union.

There is good evidence to prove that exhaustion, physical, mental, and sexual, as well as the toxins of disease, and some poisons, lessen both the male and female fertility.

The examination for the male sperm is never to be omitted even with the history of other children by the male. I have had three instances of widowers with children who married a second time, and in each there was a complete absence of spermatozoa.

In 75 per cent of the cases, the cause lies with the woman, and the number of causes is almost legion. In a general way they may be grouped as:

1. Those that hinder the entrance of the sperm cells into the uterus and tube.
2. Those that hinder the entrance of the ovum into the tubes and uterus.
3. Those preventing the proper development and extrusion of a healthy ovum.
4. Those that make the uterus and tubes unsuitable for the nidation of the ovum.
5. Those obscure causes that may be termed bio-chemical.

First—Those preventing the entrance of the

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sperm cell into the uterus. Under this heading are to be classified those developmental or acquired conditions that cause an atresia of the vagina, or of the cervix. Most of the atresias of the vagina are acquired as the result of some inflammatory condition, most often diphtheritic. The congenital atresias are usually associated with some other developmental genital defects. Some authorities feel that perineal lacerations, vaginal prolapse, and shallow perineums that fail to hold the semen, account to some extent for sterility; also that retroversion, with the cervix pointing well forward, interferes with the proper entrance of the sperm cells. I feel that in cases where this is a possible factor, either the male or the female has a low fertility index. In retroversion, passive congestion of the uterus and the concomitant cervicitis are much more important factors.

Vaginal secretions, which are inimical to the sperm cell, at times inhibit the activity of the cells, or actually destroy them. As vaginitis is usually caused by an infection from the cervix, the lesions there are to be considered as the greater etiological factors.

The secretions from the cervix may inhibit the sperm cells in a purely mechanical way, by entangling them in mucus too thick to allow their migration to the uterus, or by a distinct inhibitive or destructive effect upon the cells themselves.

Some feel that the acute anteflexion may make the entrance of the sperm cells mechanically impossible. Against this theory is the fact that the uterus can pass blood cells which are considerably larger than spermatozoa.

Second—Those that prevent the entrance of the ovum into the tubes and uterus. In this connection, adhesions around the fimbria of the tube are the most frequent lesions found, and these are more often due to gonococcal disease than to infection caused by an extension from the cervix or uterus, or from the appendix. The tube itself is also likely to be involved, so that the simple freeing of adhesions does not always render the tube patent and capable of transmitting the ovum. The prognosis as to the relief of sterility is distinctly better in the ordinary coccal infections than in those due to the gonococcus. Tuberculosis of the tubes also prevents the ovum from passing to the uterus. Infantilism of the tubes, and adhesions around the ovary itself may likewise cause the same difficulty. It is possible that with retroversion, and consequent prolapse of the tubes and ovaries, angulation of the tube or the lack of proper approximation of the ovary and the fimbriae may be deterrent factors.

Third—Those preventing the proper development and extrusion of a healthy ovum. The most frequent cause of primary ovarian sterility is hypoplasia; with this are usually associated other evidences of genital infantilism. There may develop an acquired hypoplasia as the result of an infection, or it may follow radiation. This may be temporary or permanent, dependent upon the degree of the infection or the intensity of the radiation.

The capsule of the ovary, as the result of inflammation, may become so thickened that the Graafian follicle does not properly rupture.

Ovarian growths lessen the chance of conception, but they are by no means a complete hindrance. According to Graves, the endometriomata are usually associated with sterility, and the cystadenomata and dermoids, when bilateral.

In the amenorrheas associated with lactation, hypothyroidism, change of location and climate, and those connected with debilitating diseases, there is in most cases a failure of ovulation. Too frequent childbearing may cause a hypoplasia that may be permanent or temporary.

Fourth—Those rendering the uterus and tubes unsuitable for the nidation and growth of the ovum. In the primary causes of sterility the most frequent uterine condition under this heading is infantilism, which is associated with hypoplasia of the ovary. I am inclined to think that ovarian hypoplasia is oftener encountered than uterine infantilism. The uterine hypoplasia is usually of a low degree, and often disappears after a few years of married life, or treatment directed to stimulation of ovarian activity or uterine growth. Uterine polyps, uterine myomata, and hyperplasia of the endometrium lessen the chances of proper ovular growth. Some veterinarians claim that there is often an infection of the endometrium that produces ovular death or early abortion. Curtis claims that the endometrium is sterile except in ascending gonorrheal infections, and infections resulting from interference with pregnancy, and operative procedures on the

uterus. Retroversion is a relative cause of sterility; this is probably due to the passive congestion incident to the malposition.

Fifth—Obscure and miscellaneous causes. Consanguinity is a relative cause, as well as the later generations of a mixed race union, in which there is a distinct loss of fertility. There is some evidence that the absorption of spermatoxin from the semen may act as a preventive of conception; in fact, the injection into the female has been used experimentally to prevent conception. Various endocrine disorders have been credited a role in sterility, chief of these being the ovarian and thyroid.

There are instances of incompatibility in a man and a woman, both of whom have been able to procreate when mated with other individuals. This may be explained on the ground that both have a low fecundity index and, when each is mated to a partner of greater fertility, conception is possible. There is no satisfactory evidence to prove that individuals belonging to different blood groupings are less sterile.

While not always practical to follow a definite plan in the investigation of the causes of sterility, it is best to do so whenever possible. The following is the method which I have found of advantage. It is planned so that the simplest methods are the ones first employed, so that if at any stage a definite cause is found, the patient may be spared the rest of the examination.

a. General and sex life history.

b. Physical examination, both general and pelvic.

c. Examination of condom specimen of semen to determine number, motility, and morphology of sperm cells. If this proves satisfactory, examination of the vaginal and cervical secretions of the woman, post-coitus to determine the presence and life of the sperm cells. Should this prove satisfactory, and there are no gross pelvic anomalies,

d. the patency of the tubes is investigated after the Rubin method. In the failure of the gas to pass, and when there are no contraindications, the location of the obstruction is determined by radiography of the uterus and tubes after the injection of an X-ray opaque medium.

e. All of the above being normal, and failing to account for the sterility, a complete examination of both partners is essential. Principally the venereal infections that may have caused an epidydimitis or a prostatitis in the man or a cervical or tubal infection in the woman. This is especially important in the woman as a history of infection with her would help to explain the sterility and, if the infection be recent, a warning in regard to any instrumentation for tubal patency. In most of the cases that come for investigation, the sex act itself has shown no abnormalities; nevertheless, an investigation of this is in order.

Parotitis with ovarian involvement has often been given as a cause, but many authorities feel it is over-exaggerated. I have had only one patient with an ovarian involvement, and this doubtful. The matter of sterility has not come up with her for since that time she has used contraceptive measures.

Although the pelvic abnormalities are more often the cause of sterility than those connected with the general health, it must be remembered that at times tuberculosis, hyper- and hypo-thyroidism, the intoxication of syphilis, lead, and other poisons, may be factors. Diabetes may be associated not only with sterility, but also with loss of sex desire, and with the male, inability to copulate.

The semen is secured in a condom which should be tied and kept warm by placing it beneath the clothes, next the body, and delivered to the laboratory within as short a time as possible. In some specimens the sperm cells keep their vitality for hours, but it is well to impress upon the patient that the specimen should be examined, if possible, within the hour. The search should be for sperm cells, pus and bacteria. The number of sperm cells, their motility and their morphology is to be considered. Moench has done some nice work on the study of the morphology, and he has found that fertility bears a very definite relation to the proportion of normal and abnormal cells. Where the percentage of abnormal cells is high, fertility is low, and fetal deaths high. Some veterinarians (Williams and Savage), by plotting the percentage of normal and abnormal cells in bulls, have been able to predict the degree of fertility.

If the semen is satisfactory in the condom specimen, arrangements are made to examine the vaginal and cervical secretions after normal intercourse; if possible, within the hour. By this, one is able to determine the action

of the vaginal secretion, and that of the cervix upon the sperm cells. While the vaginal secretion is normally acid, it may be so excessively so that the sperm cells are hampered in their onward progress, or actually killed. With an aspirating syringe and a cannula, a specimen is obtained from high in the cervical canal. If cells are found that are normally active, it is to be inferred that they will make the grade to the uterine canal. This examination is not entirely free of error for the sperm cells may, at the time, have already passed the internal os, and those that were in the vagina been carried away. The cervical secretion may be inimical by mechanically preventing the entrance of the sperm; it may have a lytic or otherwise inhibitory effect because of its chemical nature (Kurzrock).

Carey was one of the first to attempt to determine the patency of the tubes and this he did by injecting saline solution through the uterus. Kennedy followed with the use of argyrol and radiography. The greatest impetus and the best single method is that of gas insufflation as elaborated by Rubin. At first oxygen was used, but the slow absorption from the peritoneal cavity made it less desirable than the carbon dioxide that is now used. In general, the method consists in inserting a cannula into the uterus beyond the internal os with a cone shaped rubber, of such shape and fitted on to it at such a distance from the tip, that it forms an air tight stopper at the external os. The gas is instilled at a pressure not to exceed 200 mm. of mercury, through an apparatus that measures the amount injected and shows the speed and the pressure of injection. At first Rubin radiographed these patients to determine the presence of gas within the abdomen, as it could be shown beneath the diaphragm within a few minutes after the patient had assumed the erect posture, if injected in amounts of 200 c.c. or more. This is no longer found necessary; if the apparatus is leakproof and there is no loss during the injection, one can assume that it has passed into the abdomen. By elevating the table and flooding the vagina above the level of the internal os with boric solution after the cannula has been inserted into the uterus, any escape of gas would make itself apparent by bubbling in the fluid. If one is successful in passing the gas into the abdomen, the patient experiences, on taking the erect posture, a most characteristic pain in one or both shoulders, due to phrenic irritation when the gas reaches the diaphragm.

Normally the gas passes through at a pressure of 40 to 80 mm., the initial pressure being the higher; this pressure may vary during the injection due to contractions of the tubes. A failure to get the gas through does not necessarily indicate closure of the tubes. It may be due to spasm, swelling of the mucosa at the uterine cornu, or to tubal angulations, as sometimes met with in retroversion. In marked hypoplasia of the tubes there may be failure due to small tubes, or the tortuosity seen in such cases.

The indications for the test are failure to find an apparent cause for the sterility in the tests that have been detailed before, and the absence of factors that make it dangerous. With a history of infection that may not have cleared up, with the finding of tubal masses after such a history, and a menstrual history that might indicate a possibility of a pregnancy, the test should not be done. The best time, according to the advice of Rubin is four to seven days after menstruation, and before intercourse has taken place. This obviates the possibility of interrupting an early pregnancy; it is also more favorable in that the uterine canal is more patulous, and there is less chance of forcing endometrium into the abdomen where it might be the starting point of an endometrioma, according to Sampson. Rubin also feels that if there is some slight obstruction it may be overcome, and that if coitus should take place soon after, at a time when a ripe ovum may be able to enter the tube, the chances of pregnancy are greater.

Failure of the passage of the gas indicates the probable closure of the tubes but the site of the obstruction is still in doubt; although pain in the sides of the pelvis might lead one to suppose that the blockage was at the distal ends of the tube, and that the pain was due to tubal distention.

Passage of the gas at high pressure indicates a probable hindrance due to spasm, adhesions, kinking, etc., especially if after an initial high point the gas begins to flow at a lower pressure.

If there is a failure of the gas to pass or it passes at high pressure, the test should be repeated at another time, after a hypodermic

injection of 1/100 grain of atropine to overcome any spasm.

As the Rubin test does not give an idea of the point of tubal obstruction, in the cases that are negative to his method, the next procedure is to radiograph the tubes after the injection of lipiodol, which is a mixture of iodine in oil. A cheaper preparation, and one equally good, is iodopin (Merck). This is done by placing the patient in the lithotomy position on the X-ray table, inserting a bi-valve speculum, grasping the cervix with a tenaculum, inserting into the uterus a cannula similar to that used in the Rubin test and injecting the warmed lipiodol into the uterus. A radiograph is then made while the pressure of the syringe used for the injection is continued. Should the tubes be open and a moderate amount of the oil be injected into the peritoneal cavity, there is no harm done. If there is doubt as to whether oil has been injected into the peritoneum, the patient is radiographed the next day, when the injected oil will be found in the cul-de-sac. However, this method is reserved for the cases in which tubal obstruction has been proven by the Rubin test. In this way one is able to determine the point of obstruction in the tube or tubes, and whether or not a relief operation should be attempted.

In the absence of causes of male sterility the greatest number of the cases seen are those due to hypoplasia of the uterus and ovaries, cervical infections, and tubal obstruction, the first and the last being the most common. Of course there may be present more than one causative factor.

In the hypoplasias, if of slight degree, there is a chance that the stimulus of married life may, after a time, overcome this. In spite of the opinion of other authorities to the contrary, I believe that some of the patients have been benefited and have conceived as a result of the administration of gland products: my experience has been almost entirely with lutein. Dilatation of the uterus, either done in the office with sounds, or the more forcible dilatation under anesthesia, with and without stem pessary, has given some good results. Where there is oligomenorrhea, amenorrhea, Rongy, Rubin, and some others have noticed an improvement in the amenorrhea and a relief of the sterility by small doses of X-ray. The good effect has been explained, quoting from Graves, by the direct stimulation of the ovarian functional cells, the destruction of a persistent corpus lutein (Thaler), that has been inhibiting ovulation and menstruation. Geller feels that there may be inferior follicles that interfere with the normal maturation of others and that the destruction of these inferior cells releases the block. Rubin reports the cure of nine out of twelve cases in which there was an associated amenorrhea, and Rongy has had success in eight out of thirty-six cases of ovarian sterility. The dosage in the amenorrhea has been 10 to 15 per cent of the skin erythema dose, and with those with oligomenorrhea 5 to 10 per cent. While it is a well known fact that X-ray, both in humans and animals, may cause deformities of the fetus, in none of the cases mentioned has there been any deleterious effect on the offspring.

Several years ago, I had a talk with my friend, Dr. Robert T. Morris, on sterility in women who showed stigmata of degeneration with hypoplastic genitals, and he brought up the question as to whether it were wise to attempt to help these women overcome their sterility, as he felt it was a provision on the part of nature to curtail the reproduction of individuals who might be more unfit than their parents. The children I have seen born of women in whom the sterility has been overcome, seem to be as fit as others. It would be interesting to follow the history of their progeny and determine if there was a lack of fertility in them.

Cervical infections and lacerations should be looked after by appropriate operations, cauterizations and local treatments. Personally, I do not believe that these conditions have much bearing on the subject.

Retroversion, I feel sure, is a relative cause of sterility, and I have seen a number of conceptions take place after operative or pessary correction.

Tubal obstruction is one of the great causes, and in secondary sterility, I believe leads all the rest. If it is the result of an infection following labor or abortion, operation on the genitals, or appendicitis, the chances of overcoming the occlusion are better than when the condition is due to gonorrhea. Where the tubal obstruction is near the fimbria, the hope of relief is better than when it involves the whole tube or the uterine end.

Some of these obstructions are overcome by

the gas insufflation. Indeed, this experience has been so general that we now regard the Rubin test as not only a diagnostic but a therapeutic aid. Moench, in analyzing the cases in my clinic, found that conception took place in 8 per cent. In my private practice, I am sure the percentage is higher than this. I have three patients in whom the primary sterility ceased after the first inflation, and subsequent pregnancies have followed insufflations after a relatively long, secondary sterility.

One should be cautious in offering any hope in the relief of tubal sterility, especially if the obstruction is at the isthmal portion of the tube. Where there are only fine adhesions around the fimbria there is hope of conception after the freeing of them. In some instances, success has followed salpingostomy. Implantation of the tube into the uterus after the removal of the obstructing cause in the proximal portion has rarely succeeded. Morris and Estes have reported pregnancies after the implantation of a portion of an ovary into the cornu of the uterus. In Morris's case the ovary was obtained from another woman: this brought up the question as to who was actually the mother of the child.

Conclusions: Modern methods have made the study of sterility most interesting, and at the same time have laid a heavier duty upon the gynecologist.

By these methods he is able, in most instances, to determine the cause of the condition and, with this knowledge, he is able to plan a successful treatment. Likewise, such examinations may show the futility of any measures and the patient is spared needless operations.

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SURGICAL TREATMENT OF HEAD INJURIES.*

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There was a time when head injuries were regarded as a major surgical problem only in the fairly large industrial centers. Since, however, improved roads have become universal and the whole country has become motorized, the automobile has won a place as one of the captains of the battalion of death; and injuries of the head are a matter of interest and concern to every road-side doctor. This is regarded, therefore, as a very timely subject; and the Executive Committee is to be congratulated on choosing it for discussion at this meeting.

When one is confronted with the care of a head injury, the most important consideration is: What has happened in the intracranial cavity. Except as it produces brain trauma, or acts as a barrier to the treatment of such a lesion, fracture of the skull, *per se*, may be largely disregarded. According to Sachs, one of six things may happen in a severe head injury:

A. Compound fracture with or without rupture of the dura.

B. Simple depressed fracture.

C. Intracranial hemorrhage.

D. Contusion and laceration of the brain.

E. Edema of the brain.

F. Rupture of the arachnoid with the escape of cerebro-spinal fluid into the subdural space.

To take up the indications for treatment in the same order:

Compound fracture of the skull would be dealt with according to the same surgical principles as would apply to lacerated wounds elsewhere. After thorough sterilization, a complete debridement would be made of all lacerated, devitalized and grossly soiled tissue. Soiled bone fragments should be removed. If bone fragments are reasonably clean and attached to dura, they may be saved. Owing to the fact that the skull is not a weight-bearing structure, fragments of bone may be sacrificed more generously than in the case of fracture of the long bones. In caring for compound fractures of the skull, wound soiling and infection constitute one of our major problems. If the dura is torn, it should be sutured, if possible. If the patient is seen early and gross soiling is not apparent, the wound may be completely closed. Usually, however, it is wise to use temporary, subdural drainage. Late cranioplasty to cover defects is sometimes required.

Basal fractures, while they are in fact compound, present quite different problems, because of the fact that the avenues of infection are more or less inaccessible to surgical approach. They communicate with the surface by way of the nose, throat or ear, depending on the cranial fossa involved. While it is true that basal fractures have been operated

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upon by brain specialists with good results, it is my personal conviction that, in the hands of the average general surgeon, these cases had best be treated by the more conservative procedures of brain shrinkage and spinal puncture. When operation is performed, it consists of a subtemporal decompression.

Fractures involving the paranasal sinuses are particularly fatal. If it is impracticable to operate on such a case immediately, then one had best postpone surgery for a week or ten days, or more, thus giving time for the avenues of meningeal infection to be sealed over by adhesions. Early drainage is important. If cerebro-spinal fluid is escaping from the nose, an attempt should be made to close the laceration in the dura.

All simple depressed fractures should be operated upon as soon as practicable after primary shock has been overcome. Systolic blood pressure of 60 or less and subnormal temperature are regarded by us as evidence of a degree of shock contraindicating surgery. When the depressed pieces of bone are elevated, large fragments may be removed and kept in warm saline solution. After the dura has been inspected, lacerations repaired and hemorrhage controlled, the fragments may be replaced in the defect and the scalp flap closed. In case of blood clot, or considerable collection of cerebro-spinal fluid beneath the injury, it is best to provide for temporary drainage. Fracture of the inner table of the skull requires the same treatment. Depressed fracture of the newborn, resulting from birth trauma, sometimes requires decompression.

A progressive rise in blood pressure following head injury indicates intracranial hemorrhage. Localized intracranial hemorrhage is a positive indication for prompt operation.

While a detailed discussion of cerebral localization lies outside the limits of this paper, it is nevertheless a fact that localization is, perhaps, the most important problem in the surgery of intracranial hemorrhage. The hemorrhage is not always at the point of skull fracture. At times there is severe hemorrhage without fracture. If there are constitutional symptoms pointing definitely to intracanial hemorrhage, upon which side of the skull shall we operate? Extradural hemorrhage of arterial origin is usually due to rupture of the middle meningeal artery, or its anterior or posterior branch. This is a rather fortuitous circumstance, for the hematoma is thus located in the temperoparietal area and produces sufficient pressure on the motor cortex to cause definite focal symptoms.

When, however, the hemorrhage has occurred in a silent area of the brain, its accurate localization requires considerable diagnostic skill, and the problem may tax one's resources to the fullest. In such a case, the cooperation of an oculist and an internist, trained in neurological observation, are extremely helpful. It is almost trite to state that intelligent treatment of head injuries without the aid of the X-ray is practically impossible.

Rutherford, Greenleaf and others have made the interesting observation that unilateral intracranial hemorrhage produces a difference in temperature on the two sides of the body. A higher temperature in one axilla than in the other indicates cortical irritation from hemorrhage on the opposite side.

Venous extradural hemorrhage is most frequently due to the laceration of a venous sinus. Sometimes it results from injury to a paranasal sinus. Intradural hemorrhage is due to the rupture of a venous sinus or the veins of the pia-arachnoid. Diagnosis is extremely difficult. Subdural hemorrhage occurs between the dura and the arachnoid. This condition is probably more common than extradural hemorrhage. Such a hemorrhage may be localized or diffuse; and bleeding may occur from sinuses or superficial vessels. Diffuse hemorrhage is usually the result of injury to a venous sinus.

It is desirable not to ligate a sinus if this can be avoided. Sometimes a small rent in the sinus wall can be closed by a purse string suture of silk, or the edges of a lateral tear can be sutured together. When one of these maneuvers is impossible, the sinus must be doubly ligated.

If one has to operate for fissure fracture with evidence of intracranial hemorrhage not accurately localized, it is best to make the trephine opening where the fracture line crosses the chief vessel of that region. The object of an operation for intracranial hemorrhage is to ligate the bleeding vessel, remove the blood clot, and repair the lacerated dura. Subtemporal decompression often fails to accomplish this purpose.

Intracranial hemorrhage of the newborn is

due to birth trauma. Such cases have sometimes been operated upon. My own experience in the treatment of this condition has been limited to spinal and ventricular puncture. I believe this to be the therapy of choice.

Contusion, or Laceration, and Edema of the Brain: As these conditions are usually associated, the one with the other, and as the symptoms are due to the combined effect of the two, consideration of their treatment will be taken together.

No tissue becomes edematous as rapidly as the brain. The symptoms of brain edema are those of increased intracranial pressure. The indications for treatment are:

1. The various brain shrinking methods, such as magnesium sulphate by mouth or per rectum, hypertonic solutions of magnesium sulphate, sodium chloride or glucose, intravenously. The results of this method of treatment are particularly gratifying in cases of brain laceration and diffuse edema.

2. Ventricular puncture and spinal puncture to remove fluid from the cavity and give the brain more room. Spinal puncture is particularly useful as a diagnostic measure, and the spinal fluid pressure is a fairly accurate index of the intracranial pressure. This procedure is, however, not without danger; and, if repeated spinal puncture is resorted to as a therapeutic measure, the fluid should be released slowly and guardedly.

3. The more conservative methods having failed, subtemporal decompression should be considered. If the pulse pressure continues to rise until it equals the pulse rate, it is an indication of extremely dangerous intracranial pressure.

The symptoms of ruptured arachnoid are not unlike those of middle meningeal hemorrhage, except that there is no increase in blood pressure. The surgical treatment of the condition involves a craniotomy. On nicking the dura and allowing the yellow, or blood stained fluid to escape, there is rapid improvement in the symptoms. The so-called free interval between the head injury and the beginning of symptoms may be hours, weeks, months, and even as long as ten years.

The extremely delayed onset of symptoms is due often to traumatic aneurisms of the cerebral vessels, which finally rupture. Of the late results of head injury, epilepsy is the most common. This is usually of the Jacksonian type, developing on the side opposite the injury. Cranioplasty should be advised where there is definite evidence of pressure on the cerebral cortex; but the results of surgery are not particularly encouraging. Sometimes the condition is aggravated by operation.

To summarize: In the treatment of head injuries, the fractured skull is of minor importance. The various conservative methods of treatment, such as brain shrinking, spinal and ventricular puncture, have, in my experience, contracted the field of emergency cranial surgery to cases of compound fracture, depressed fracture, intracranial hemorrhage, and intracranial pressure not relieved by non-surgical treatment.

As a rule, I do not operate on a brain injury unless definite localization can be made. The surgical objective is to expose and repair the lacerated dura, remove compressing substances and control hemorrhage. Routine subtemporal decompression fails because it does not remove the compressing substance nor control the hemorrhage. No case of head injury associated with even transitory unconsciousness should be regarded with professional indifference.

REFERENCES.

E. Sachs: *Wisconsin Medical Journal*, February, 1927.
General Surgery, Practical Medicine Series, 1926.
Idem, 1927.
A. G. Rutherford: *Southern Medical Journal*, May, 1925.
J. F. Connors: *Annals of Surgery*, May, 1925.
Operative Surgery, Bickham.

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HEAD INJURIES—NEUROLOGICAL SEQUELAE.*

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In discussing the neurological sequelae of head injuries, we shall leave out of consideration the immediate nervous and mental symptoms because they are really symptoms and not sequelae; sequelae are lesions or affections following or caused by an attack of disease or an injury. In head injuries, we may have all degrees of trauma, various methods by which the force is applied, various locations and positions to and in which it may be applied, and an important fact to be remembered is that the brain is an encapsulated or-

*Read as part of a symposium on Head Injuries before the Southwestern Virginia Medical Society, at Wytheville, Va., September 27-28, 1928.

gan and that the skull, or capsule, is absolutely inextensible by any physiological force. Therefore, any swelling of the brain or the intrusion of a foreign substance into the cranial cavity must cause a corresponding displacement of some material or other from within the skull. Damage resulting thereby interferes with the normal functioning of the most important portion of the central nervous system. When we consider the relative frequency with which the brain is subject to varying degrees of trauma ranging from slight concussion and contusion, squeezing during difficult labor, pressure from temporary deformation of the skull, fractures and penetrating wounds, the real wonder is that we do not see a much larger percentage of serious neurological sequelae. Refined diagnostic methods with suitable early surgical intervention in hemorrhage and depressed fracture cases probably help to keep low the percentage of unfavorable after-effects.

Without attempting to differentiate as between the various degrees of trauma and the different methods by which the force is applied, and the different types of injury resulting from the one or the other, we shall simply enumerate in the order of their importance the various neurological sequelae and discuss each from several standpoints.

I. *Epilepsy:* Recurring convulsive seizures are occasionally the result of a known head injury. In some cases epilepsy may occur years after the injury from a scar, a degenerative process of the cortex or a small cyst, any of which can result as a late complication of skull fracture. Yet, epilepsy is infrequently actually the result of trauma.. We know that the alcoholic, the luetic, the neurotic and the degenerate are the progenitors of the epileptic. In some cases epilepsy can be traced to injuries of the head at birth. These are, however, usually the distinctly focal ones, or the Jacksonian type. The focal epilepsies are often amenable to surgery. True epilepsy, whether congenital or traumatic, usually is not. Surgery, however, is most valuable as a preventive and the early rational treatment of depressed fractures, or compression from clot or serum, lessens the chances of the patient for a neurological or psychiatrical complication. Many so-called cases of traumatic epilepsy following concussion are actually cases in which the soil was fertile and the trauma only the exciting factor. There is no particular type of head injury especially liable to produce it and patients who have Jacksonian fits as an immediate symptom seem to have no peculiar liability to become epileptic later. The treatment of a given case of epilepsy, resulting from trauma, and which is not amenable to surgery, is no different from the treatment of epilepsy in general. The routine administration of luminal following head injuries is valuable in preventing subsequent convulsive seizures.

II. *Mental Deterioration:* This occurs in varying degrees and, as in epilepsy, the serious cases are usually predisposed and the trauma the exciting factor. As a result of intracranial hemorrhage at birth we may have mental deficiency ranging from a low-grade imbecile to a backward child. After concussion, the recovery from which is usually complete and permanent, we may have appear, weeks or months after the injury, an entire change in the nature of the patient, manifested by egotism, selfishness, irritability, outbursts of violent rage about trivials, and forgetfulness. This f orgetfulness is particular as to recent events. There are at times long gaps of memory. Less rarely actual insanity may arise, usually from the injuries causing brain destruction.

III. *Headaches:* Headaches following head injuries are usually the result of unresolved contusions with consequential cerebral irritation. They are often persistent and intense; occasionally they disappear spontaneously. Usually they are not localized. Often they are accompanied by insomnia, depression, and lassitude. In severe cases, there are sometimes mental symptoms. Usually the slightest exertion precipitates an attack, and it may last for several hours to several days. As long as the patient remains quiet and lives a life of ease, he is fairly comfortable; but any occupation necessitating physical exertion brings on attacks, and he sooner or later finds himself utterly incapacitated from performing any labor. In many of these cases, a sub-temporal decompression brings about immediate relief. Free saline catharsis is especially valuable.

IV. *Vertigo:* Dizziness or dizzy spells may follow any type of head injury but most commonly are the result of concussion. Unlike

post-traumatic headaches, there is very little hope for relief, surgically or otherwise. Outwardly, the sufferer is well and physical examination is usually negative, but on slight exertion, exposure to the sun, or to stimulants, he becomes dizzy. This dizziness may be manifested in all degrees and may last from a few minutes to days.

V. *Spastic Paralyses:* The spastic types of paralyses are unimportant because they are relatively rare. They may be present in the form of either monoplegia, diplegia, or quadriplegia. Usually they are accompanied by focal epilepsies. Surgery is helpful in most of these cases.

VI. *Cerebral Palsies:* Palsies of cerebral origin are usually the late results of head injuries at birth. They are rare.

VII. *Post-Traumatic Neuroses:* Following blows on the head, we may have every type of neurosis. Usually they are temporary. In cases where they are permanent, the trauma is usually only a contributing factor. After concussion the susceptibility to alcohol and to sunlight is markedly increased, and quick fatigue is characteristic.

ADAMANTINE EPITHELIOMA—REPORT OF A CASE.*

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M. R., age 60 years, female, admitted to St. Philips Hospital on November 25, 1927, was referred by Dr. J. R. Grinels.

Chief Complaint: Large tumor of chin, extending to both sides of the lower jaw; difficulty in mastication of food and very little pain.

Family History: Negative.

Past History: Patient has had the usual childhood diseases; influenza in 1918; slight rheumatism in the knees several years ago. No serious illness. No operations nor injuries. The cardio-vascular, respiratory, gastro-intestinal, and genito-urinary systems are negative. The menstrual history was normal with menopause at the age of fifty.

Present Illness: The patient dates the onset of her trouble to twelve years ago, with the extraction of two lower teeth in the right molar region which she thought were abscessed. Since then there had been intermittent enlargement of the lower jaw on the right side about the chin. The patient spoke about abscesses rupturing and draining inside her mouth. There was no history of pain or fever. After the rupture, the drainage would cease, and the swelling reappear. Since January, 1927, the swelling has been progressive, enlarging the chin and extending to both sides. The swelling has been greater on the right, causing the tongue to be pushed up and to the left. There has been no ulceration nor bleeding, and very little pain. The patient has lost some weight during the past year, presumably due to the inability of mastication and insufficient nourishment. There have been no tumors elsewhere in the body.

Physical Examination: The patient is a well developed and fairly well nourished female beyond middle life. The skin and mucous membranes are clear. There is no general glandular enlargement.

Fig. 1.—Appearance of patient before operation, showing enlargement and protrusion of the chin. The lower front teeth are widely separated and displaced forward and above the upper.

Head and Neck: The patient shows a large swelling of the lower jaw involving the chin and lateral aspects on either side to the molar region. The swelling is smooth and even in outline and is about the size of a large orange. The lower lip is forced forward and upward by the mass. Inside the mouth the swelling involves the alveolus. The lower front teeth are present but forced out of their normal position in a forward and upward direction and appear as widely separated pegs in the tumor.

*Read before the Richmond Academy of Medicine, February 28, 1928.

These teeth are loose. The tongue is pushed upward and to the left by extension backward of a soft tissue mass in the floor of the mouth on the right side. On palpation the tumor of the chin is firm and hard as bone in places, and in others the wall yields somewhat on deep pressure with a parchment like crepitation. There is no special tenderness about the tumor. There is no ulceration nor bleeding surface. There is no glandular enlargement in the neck.

The pupillary reactions are somewhat sluggish.

The neurological examination is negative.

Heart and lungs are normal.

Abdomen: Normal.

Extremities and reflexes are normal.

Laboratory Examinations: The urinalysis was negative for albumin, sugar, casts, pus, etc.

Hemoglobin 80 per cent. Red cell count: 3,816,000. Leucocytes 8,400. Polys. 58 per cent; small lympho. 30 per cent; large 8 per cent; and large monos. 4 per cent.

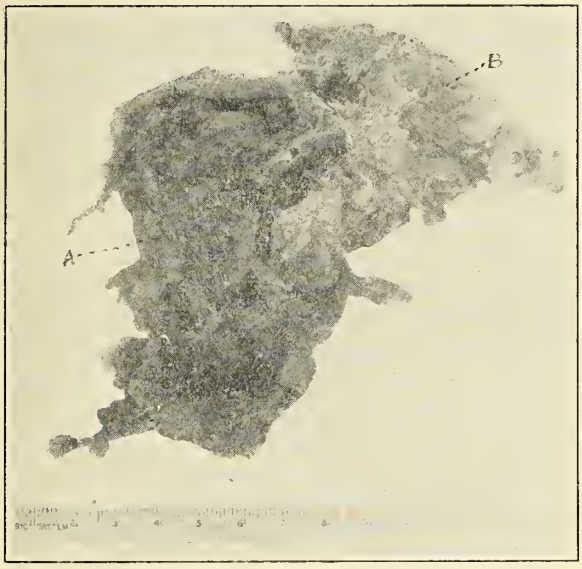

Fig. 2.—Gross appearance of tumor after removal.
A. Cystic portion removed from the chin.
B. Solid portion located in the floor of the mouth on the right side.

The blood Wassermann was negative.

The roentgenogram reported by Dr. J. L. Tabb was as follows:

"Much bone destruction is noted on the anterior aspect of the mandible which extends backward on the right side to the molar region, and backward on the left side to the molar region. The cortex of the bone has such marked expansion that it is hardly visible. The condition is probably a very extensive cyst of the jaw."

Diagnosis: Adamantinoma, or probably a dentigerous cyst. Malignancy of the tumor was considered. It was not likely, due to the duration of the growth of twelve years, absence of ulceration and glandular enlargement and the cystic appearance of the growth.

Operative removal was advised.

Operation: On December 2, 1927, under local anesthesia, later enhanced by ether, the operation was started, first, by extraction of all the lower front teeth involved in the tumor by Dr. A. M. Wash. An incision was made beneath the lower border of the mandible from near one angle to the other. The skin and soft tissues were easily separated from the wall of the tumor as far as it was necessary to give adequate exposure. The wall was ruptured through a soft area and a pocket of the cyst evacuated of a straw colored fluid. On further exploration of the inside of the tumor it was found to be multilocular, with the cysts varying in size and separated from each other by partly fibrous and bony partitions. The fluid of the different pockets varied from a thin straw color in some to a thick tarry appearance in others. The pressure of the cyst had caused a marked thinning and absorption of the mandible so that there was only a very thin shell of bone in places. The lower posterior portion of the wall of the tumor was composed of thicker bone, and it was thought advisable to preserve this portion of the mandible to give support after the tumor was removed. The thin membranous lining of the cysts was easily separated and removed from the surrounding bone and soft tissue. Extending backward in the floor of the mouth on the right side was a soft tumor mass about 5 cm. in diameter. This was removed chiefly by blunt dissection. It appeared to be encapsulated. The lining membrane of the cyst and the solid tumor appeared to be entirely removed. The posterior bony wall was preserved to support the jaw. The wound was closed with drainage. The patient entered the operating room with a pulse of 118 and left with 130.

Post-Operative Course: The patient reacted normally from the anesthetic. The wound healed by primary union and without

infection. The temperature ranged around 100, on several occasions 101 F., for one week, and then became normal. On the second post-operative day the urinalysis was negative, and on the fourth the leucocyte count was 9,600. On the tenth day she was up and walking about in the room, and the wound was completely healed. The cosmetic result was good. She was discharged on the sixteenth post-operative day. A recent communication from her family doctor stated that the patient has been in good health and that there had been no signs of recurrence of the growth.

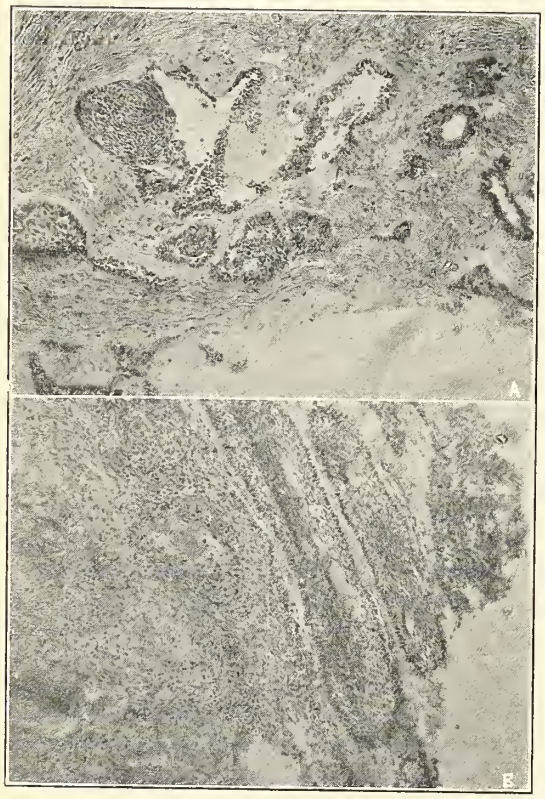

Fig. 3.—Photomicrograph of tumor under low power study.
A. Whorl-like nests of epithelial cells are seen, also cystic areas surrounded by epithelial cells. The stroma here is mostly fibrous and not very cellular.
B. Columns of epithelial cells the outer layer of which is of the cylindrical type. Many cystic areas are seen. The stroma here is very cellular. H. & E. Stain.

Pathological Report

Dr. Chas. H. Phillips presented the following report:

"Gross Description: The tumor mass is a bony shell about 5 cm. in diameter, bordered on one side by a hemorrhagic membranous tissue about 10 cm. long and on the other by a pinkish-white lobulated mass about 5 cm. in diameter. The surface of the mass is partly covered by a mucous membrane, suggesting the gums, and partly by cauliflower-like gray, flattened projections.

"Microscopic Description: The tissue shows a diffuse growth of modified squamous epithelium, often arranged atypically and in places undifferentiated. Much of this hyperplastic epithelium suggests origin from the buccal mucosa, and in places there are found poorly developed epithelial whorls. Some of the epithelium is of the transitional type. There are several small cystic cavities partially lined with a sort of a cuboidal epithelium and some small groups of the same cells appearing as if about to become cystic. There is also present some chronic inflammatory reaction and some necrosis in places. It is difficult to assign definite origin to this epithelial process but the transitional type of cell and its apparent tendency to line cystic spaces could fit in with an adamantine carcinoma. The process does not appear to be highly malignant now, although the degree of hyperplasia is notable and suspicious.

"Pathological Diagnosis: Cystic adamantinoma of the mandible."

Discussion: Adamantin epithelioma is known by many names, such as adamantinoma, adamantinoma cysticum, multilocular cyst, and adenocarcinoma. It is one of the classes of odontomata described by Bland Sutton. According to Malassez, it arises from the epithelial debris about the enamel organ in the development of a tooth. The duration of the growth is over a number of years, as much as twenty to thirty years having been reported. It is a benign tumor, but it must be borne in mind that malignancy sometimes takes place especially on recurrence after removal.

The tumor has a fibrous tissue stroma which may vary considerably in the amount of fibrillary and cellular material. In the present case the cellular content of the stroma was abundant in places. In this fibrous stroma occur nests or columns of epithelial cells. The cells of the outer layer are columnar or cylindrical, which is a characteristic feature of this type of tumor. The epithelial cells frequently resemble the stellate cells forming enamel. The center of this nest of epithelial cells may show degeneration, which undergoes liquefaction, resulting in a small cyst. There are many cysts throughout the tumor which vary in size due to the fact that several cysts may fuse with

one another by degeneration of the intervening tissue separating them. The growth and pressure of the cyst inside the mandible cause a thinning of the bone. Usually the anterior wall of the mandible is more destroyed than the posterior. This was true in the case here reported.

Fig. 4.—Photograph of patient 15 days after operation. Notice the normal facial features, contour of the chin, and inconspicuous scar.

From the surgical standpoint, after complete primary removal, the tumor does not recur. It is not necessary to resect the lower jaw to effect a cure, but it is very important to remove all the lining membrane of the cysts and solid tumor tissue. The thicker portion of the bony wall, usually the posterior, should be preserved to support the mandible and prevent deformity as far as possible.

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ADVANCES IN DIABETIC THERAPY SINCE THE USE OF INSULIN.*

By
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Due to the research and work of Banting, Best, Joslin, Allen and a host of others, the world has been made safe for the diabetic should he choose to learn and live. Recently before the New York Academy of Medicine, Joslin made the statement that the non-diabetic is fortunate to be able to live as long as the diabetic, the age span of the former having been increased twelve years during the past twenty, while that of the diabetic has increased sixteen in the same period. Operations hold no more peril for the diabetic in the hands of a competent internist and surgeon than for the non-diabetic; in fact, he usually goes through a less stormy convalescence than his so-called normal brother. It is doubtful if any drug has ever been introduced to the profession with greater care than insulin, resulting in a well trained group of physicians skilled in its use and in the treatment of the disease. So well has this instruction gone on that it can almost be said that the average internist of today has the knowledge of the expert of a decade ago.

Diet

While diet remains our sheet-anchor in the treatment of this disease, the results attained would be impossible without insulin. However, insulin without diet makes an impossible combination, the end-result being failure. Prior to the introduction of insulin, it was the exception to find a patient on a weighed or measured diet. The instructions to the patient included many "dont's" with regard to diet and usually as a sort of good luck charm allowed the use of gluten bread. Even today, it is rare to see a diabetic patient treated by the family physician, who has not been on a diet of which this bread is a part. It seems difficult for many to learn that the average gluten flour is not starch free or even nearly so and that the high protein contents forms a source of glucose. Gluten bread benefits the patient less than it does the manufacturer and baker. If the patient is able to take gluten bread, he is usually able to eat ordinary baker's bread. Prior to the use of insulin, little instruction was given to the patient regarding the nature of his disability, the calculation of his diet, elements of body chemistry, the prevention and emergency treatment of complications, etc., and quite naturally cooperation was rarely obtained, for why should one go to a great deal of inconvenience unless there is a good reason for it? Today the average diabetic is well schooled in these subjects as a preliminary to the treatment of his disease: in fact, many clinics maintain schools for the instruction of diabetics. Today the well trained patient is as conversant with "calories,"

*From the Laboratories of the Garfield Memorial Hospital, Washington, D. C.

*Read before the Osler Society, Washington, D. C., March 19, 1928.

"carbohydrate," "protein," "fat," "acidosis" and similar terms as many a physician. Filling a dietary prescription, examination of the urine for sugar and diacetic acid and for some blood sugar estimations are all in a day's work.

While it is our desire to teach our patients to think of the amounts of carbohydrate, protein and fat in grams and to be able to substitute a certain amount of one kind of food for an equivalent amount of carbohydrate, protein and fat, we must realize that there is a certain type of patient with whom this is impossible, due to lack of education. While the weighing of food is to be desired, except in the very mild diabetic, we are almost compelled to use substitute measures for these people. Here we can utilize the ordinary kitchen measuring cup and teaspoon to advantage with excellent results and obtain a satisfied and cooperative patient, where otherwise misunderstanding and dissatisfaction and ultimate loss of cooperation would follow.

There is no reason why any physician, who is willing to devote the necessary time and thought to the subject, cannot successfully treat this disease. Numerous charts, manuals and blank forms aid the physician of today in the effective care of his patient. The matter of diet has been made simpler to calculate than it was at the beginning of the insulin era. According to Allen at the recent meeting of the American College of Physicians, it is not necessary to calculate a diet according to the basal requirements of the patient, and the ketogenic and antiketogenic factors can largely be forgotten. The tendency at the present time is to get away from the high fat diets sponsored by Newberg and Marsh and to give more liberally of carbohydrates and protein. It now seems to be the consensus of opinion that large amounts of fat may be and probably are distinctly harmful to the blood vessels and more or less interfere with the regaining of a carbohydrate tolerance on the part of the patient. Joslin,[1] giving a minimum of fat and fairly large amount of carbohydrates and protein, has been able to carry his juevnile diabetics along satisfactorily with smaller amounts of insulin than used in many of the large clinics of the country. By gradually increasing the carbohydrate allowance of the patient, the tolerance can often be raised to a surprisingly high level and by a combination of this and insulin the patient's ability to utilize carbohydrate can frequently be raised from 50 to 100 per cent. With children we endeavor to give a diet approaching as nearly as possible that of a normal child for the same age. In 1925[1] the average diet per kilogram of body-weight given by Joslin in sixty cases contained 2.7 grams of carbohydrate, 1.9 grams protein and 3.4 grams of fat. He reports[2] the cases of ten children who began insulin in 1922. During a four year period following this, he has been able to double their carbohydrate, increase the protein one-half and the fat one-third, giving about 50 per cent increase in calories. Knowing that the amount of sugar in the blood is usually highest in the morning and lowest at night, we endeavor to include the greater portions of carbohydrate in the noon and evening meals. Occasionally the reverse will be found and breakfast would then receive the larger allotment of carbohydrates.

It has been our practice to give from 2 to 3 grams of protein per kilogram, the protein requirements being increased due to the increased metabolism in children.

Insulin

As stated before, it was impossible to obtain present-day results prior to the use of insulin and this drug has brought hope to all diabetics and happiness to many families where death would have taken its toll before. The increase in the age span of the diabetic is due largely to the prolongation and saving of the lives of children through the agency of insulin and intelligent treatment. As when it was introduced to the profession, insulin still remains a drug which if improperly used can cause serious trouble, and the physician who intends to make use of it should appreciate its potentialities for both good and evil. We find that we can keep our patients sugar free on smaller doses of insulin than previously, possibly by using less fat and more carbohydrate or by a more intelligent arrangement of insulin dosage. Where we formerly gave insulin before meals we now find that a fourth dose may at times be necessary, or, in place of a dose at supper, one several hours after this meal may better control the hyperglycemia which occurs usually between nine at night and breakfast. Allen recommends in some

cases to give the evening dose several hours after supper and the morning dose an hour or so before breakfast as a means of controlling this rise. We have known of several patients for whom it was necessary to give a dose at two or three o'clock in the morning. We have learned that smaller doses, not over 25 units at frequent intervals if necessary, are preferable to doses above this amount widely separated, as too great a fluctuation in the blood sugar is likely to occur.

While the blood sugar is usually estimated on samples secured in the morning before breakfast, after treatment has been started a better idea of the manner in which the food is being utilized can be obtained by drawing the blood specimens three hours after breakfast, in the late afternoon, just before the evening meal or occasionally between ten and twelve o'clock in the evening. Reports on blood sugar concentration at these various times will give one the knowledge of the variation during the day, usually highest in the morning and lowest at night. In young and middle aged patients a blood sugar of 160 milligrams per 100 c.c., three hours after breakfast is allowed, but in elderly patients amounts of 200 or even higher are frequently acceptable. If the renal threshold is normal, examination of four period specimens of urine—(1) breakfast to luncheon, (2) luncheon to dinner, (3) dinner to midnight, (4) midnight to breakfast—will give similar information and save frequent blood examinations. If the renal threshold is elevated to a considerable degree above normal (occasionally as high as 400 milligrams per 100 c.c.), blood examinations are essential, but we occasionally find a patient who does better by adjusting the diet and insulin according to our urine findings, rather than according to the blood sugar concentration. In elderly patients we must frequently be content to maintain the blood sugar concentration at a much higher level than we would in younger patients. We have seen cardiac distress complained of when the sugar in the blood was lowered by insulin to so-called normal levels.

However, we know that in an emergency, such as diabetic coma, 25 unit doses given subcutaneously and intravenously at frequent intervals are life saving and the formerly hopeless case can now usually be saved if observed and treated constantly over a period of hours, with frequent examinations of the blood and urine. If at all possible these cases should be treated in the hospital where frequent laboratory examinations are possible and all types of emergency treatment available. Diabetic coma demands the attention of the physician constantly until the acid poisoning is overcome or the patient dies. Usually it is possible to save a patient who has not been in coma more than twenty-four hours. With the increased knowledge concerning the treatment of diabetes, these cases are fortunately becoming rare. With the advent of insulin the use of bicarbonate of soda in this condition has become of less importance and in the hands of some is never used. One must not forget that a small percentage of acidosis is due to a retention of other organic acids than those involved in imperfect fat metabolism, and sodium bicarbonate is especially reserved for this type of case. After all, in this condition we are chiefly concerned with the degree of acidosis and not so much interested in the glucose content of the blood except to prevent its too rapid fall or a reduction below normal. For this reason it is perhaps well to use a certain amount of carbohydrate by bowel, mouth or vein in connection with the administration of insulin, although many cases of coma have been brought under control without the use of glucose, depending on the utilization of the excess glucose as evidenced by the high blood sugar. Eight to twelve hours' work and attendance on a coma patient, with the judicious use of insulin, usually rewards one with the knowledge that he has saved a life which would in all probability have been lost if insulin had not been available.

Operative procedures can be performed without fear, knowing that we can build up a carbohydrate reserve to be drawn upon as a result of the increased metabolic changes incident to anaesthesia. Patients are given carbohydrates and the necessary insulin up to three hours of the time of operation, and, if necessary, the introduction of glucose and insulin by vein can be continued during the operation and following operation. Postoperative acidosis need not be present if carbohydrates are given by bowel, vein or mouth with sufficient insulin to care for same, the blood sugar, carbon dioxide combining power of the blood and urinalysis being our guides

for both insulin and carbohydrate therapy. Fluids are often as essential as either of these substances.

Infections and febrile reactions which previously were the starting points of acidosis and coma should cause us no more concern than the disease or condition at fault, as the patient is treated in exactly the same manner as the non-diabetic with the addition of sufficient insulin to take care of his needs. The diet is the diet of the non-diabetic. Frequent examination of the urine for sugar, acetone and diacetic acid, with occasional blood sugar estimations, will give information necessary to adjust the dosage of insulin. As feedings are often given every three or four hours, the frequency of the administration of insulin is usually increased.

By the use of insulin the carbohydrate tolerance of the patient can be raised to a degree not possible prior to the introduction of the drug. A certain amount of strain is taken off the pancreas by the use of insulin with a weighed diet, and it has been definitely shown that the islands of Langerhans regenerate and, as known for some time, many cases of diabetes originally classed as severe are found to be comparatively mild.

Exercise

Next to diet and insulin we feel that exercise is our greatest aid. This fact has long been known but could not be taken full advantage of until insulin made it possible for the patient to avail himself of this aid to its full extent. Muscular work burns up glycogen and raises the respiratory quotient. In the words of a patient of Joslin, "mental work makes sugar, muscular work burns it up." This is probably most apparent in children who are taking insulin. A schoolboy, who ordinarily takes from six to eight units of insulin on school days, will experience an hypoglycemic reaction due to the lowering of the blood sugar on Saturdays, when the day is largely devoted to play, unless the dose is cut to four or five units. Usually a mile walk or active play will represent the equivalent of several units of insulin. The value of exercise was demonstrated to one of us this summer while in Boston. There were seen a large number of diabetics treated by Joslin with relatively small doses of insulin plus exercise. If the patient was bed-ridden a trained attendant gave passive exercise with almost equally good results. In the same city another large group of diabetics were treated by diet, insulin and rest in bed and it was noted that the insulin dosage averaged considerably higher.

Newer Drug Therapy

Since the nature of diabetes was known, various drugs have been introduced in the treatment of this disease, but none achieved any success until the introduction of insulin. So far as the patient is concerned, insulin has the disadvantage of having to be taken hypodermically, it being ineffective by mouth, and this method, while acceptable to the majority, is strenously objected to by others.

In 1918, Watanabe[3] reported that guanidine was effective in lowering the blood sugar. These observations were verified by Frank[4] working with Nothmann and Wagner. In a discussion before the Society for Diseases of Digestion and Metabolism, Frank reported results secured with a synthetic substance, given the name "synthalin," and described as a guanidine derivative. This is essentially a compound consisting of two guanidine radicals attached through series of CH_2 groups. In synthalin there are ten of these groups. Subcutaneous injection in rabbits produced a fall in blood sugar and this action was also demonstrated in diabetic dogs. More than ordinary interest was manifested in this substance as it was found that the drug produced hypoglycemia when taken by mouth. The dose varies between 20 milligrams and 50 milligrams per day and is usually given as follows:

	Morning	Evening
1st day	20 milligrams	20 milligrams
2nd day	20 milligrams	
3rd day	20 milligrams	20 milligrams
4th day		
5th day	Same as 1st day, etc.	

The drug appears to be slower in action than insulin, and ordinarily from two to three days elapse before any definite lowering of the blood sugar takes place. Most observers consider that 1 milligram will cause an increase in glucose tolerance of 0.5 grams to 1.0 grams. In our experience we are inclined to favor the lower figure. After a period of from two to three days the insulin dosage can ordinarily be reduced approximately two units every other

day, the total reduction in dosage being largely dependent on the individual. After a period usually of several weeks, digestive disturbances occur, loss of appetite being noted first, followed later by nausea. Vomiting has not occurred in our series. These disagreeable symptoms can be avoided according to certain clinicians by the administration of various preparations containing bile salts. We and others have adopted the practice of either omitting the drug on the third day or every fifth day, stopping the synthalin for four days and increasing the insulin dose during this period. It seems to be the consensus of opinion that this preparation can replace up to 30 and 50 units of insulin and may allow the patient to reduce the number of doses of insulin from two or three to one or none daily. It should not be used in treating diabetes complicated with infections, acidosis or coma, and, if the digestive disturbances are not given proper attention, may give rise to acidosis from starvation. Its mode of action is not known, some reporting that it has no effect on the respiratory quotient, others that the latter is increased. Reports of an investigation by Blatherwick, Sahyun and Hill[5] on the effect of the drug when administered intravenously to animals showed it produced acute nephritis and liver damage. Horning[6] reports similar findings in dogs after the continued administration of synthalin by mouth and concludes that the toxic secondary phenomena experienced by humans must be due to liver damage.

Our own experience with its use in seven patients would indicate that:

1. In all except one it had a definite effect in lowering the blood sugar, and, as a result, the insulin dosage was decreased in six, two being able to discontinue the use of insulin at least temporarily, and one, a child, occasionally.

2. All experienced digestive disturbances during the course of treatment, and in two patients it was necessary to discontinue the use of the drug on this account.

3. Various liver function tests and urinalyses do not indicate that there has been any impairment of function of the liver or kidneys.

4. Hypoglycemic reactions are delayed or not experienced with blood sugars as low as 50 milligrams per 100 c.c.

5. In the cases of two children, the drug produced a definite lowering of blood sugar in one and in the other it was ineffective.

6. In view of its possible toxic action and its limited usefulness, we are hesitant in using it in all types of diabetic patients, particularly those with renal or vascular changes.

7. The drug appears to have been partially responsible for a considerable reduction in the dosage of insulin in six patients, from an average of 31 units to 12 units. The entire reduction could not be ascribed to the use of synthalin, as a regaining of carbohydrate tolerance was gradually being established in at least two of these patients; in the remainder, the greater part of the effect was thought to be due to the drug.

Table I shows the typical effect of synthalin.

In 1925, Durig, of the University of Vienna, impressed with the benefits reported among the diabetic peasants of the Alpine regions from the use of blueberry leaf tea, induced Wagner of his laboratory to undertake an investigation of its properties. He found two substances present, one tending to elevate the blood sugar, the other to lower it. This latter substance was isolated in rather impure form and named myrtillin. Its composition is unknown. Frederick M. Allen and Wagner have continued this investigation. It occurs in the leaves of all green plants and is present in relatively large amounts in the leaves of the blueberry and other plants of the myrtle family. Wagner has reported its presence in yeasts, bacteria and oatmeal. It is possible that it may be present in various organs of the body. Allen[7] states that the drug is unlike insulin chemically or physiologically, and suggests the possibility of its being a vitamine. It is now prepared in tablets of 0.325 grams (5 grains) each, one tablet being taken one hour before each meal, the total dose for the day being 1 gram (15 grains). Smaller doses than 1 gram daily are not as effective as that amount, but no greater benefit can be secured from larger doses.

The drug has no appreciable effect on the blood sugar level in rats and rabbits, but depancreatized dogs, who have a life expectancy following operation of about one week, have been able to live from twenty-four to sixty days, averaging from four to five weeks. In partially depancreatized dogs, they continue to live indefinitely if myrtillin is used, and

without this they die after a longer period than that experienced by totally depancreatized animals without treatment. In humans, the drug has a more inconstant effect, some being definitely benefited, and others (about 40 per cent) showing no change in the blood sugar.

Of sixty patients treated with myrtillin by Allen,[7] twenty-four showed no effect from the drug, and the remaining thirty-six were considered to have been definitely benefited, as evidenced by the ability to take more food or to decrease the insulin. Six patients were able to stop the use of insulin entirely. As with synthalin and other guanidine derivatives, cemic reactions in many cases, or in others delays it. As with synthalin, it appears to act best in the middle aged or those well along in years, although it has been of value in the treatment of some children and ineffective in some elderly patients. It will not lower the blood sugar below normal if used alone.

Our experience has been confined to its use in six patients. While the majority have not been taking the drug* long enough to evaluate its effect, we have thus far noted no toxic effects. In two cases a slight increase in tolerance was thought to have been brought about through the use of myrtillin.

Considerable attention has been paid to a

TABLE I

Miss. M. A. age 23, height 67 Inches

ate	DIET				Blood Sugar	Time	Insulin Units	Synthalin Mg.	Remarks
	C	P	F	Cal.					
1926									
June 12	103	57	104	1576	178	8 A. M.	64		Weight, 100 lbs.
June 17	103	57	104	1576	147	8 A. M.	68		Weight, 104 lbs.
July 8	93	55	104	1528	159	8 A. M.	68		Weight, 105 lbs.
Sept. 5	61	45	93	1261	146	8 A. M.	63		Weight, 120 lbs.
Oct. 10	84	56	92	1388	134	8 A. M.	68		Weight, 130 lbs.
Dec. 12	50	68	130	1642	139	8 A. M.	60		Weight, 138 lbs.
1927									
March 5	50	68	130	1642	90	8 A. M.	24		
May 8	50	68	130	1642	248	8 A. M.	32		Weight, 140.5 lbs.
June 26	50	68	130	1642	96	8 A. M.	30		Weight, 139 lbs.
July 29	60	68	120	1592					
Aug. 8	80	70	115	1635					
Aug. 13	90	70	115	1675	126	11 A. M.	30		Weight, 135 lbs.
Sept. 18	90	70	115	1675	152	11 A. M.	30		
Oct. 16	90	70	115	1675	100	11 A. M.	30	40	Weight, 134 lbs.
Oct. 17	90	70	115	1675			28	20	
Oct. 18	90	70	115	1675			24	40	
Oct. 19	90	70	115	1675			24		
Oct. 20	90	70	115	1675			22	40	
Oct. 21	90	70	115	1675			22	20	
Oct. 22	90	70	115	1675			22	40	
Oct. 23	90	70	115	1675	145	11 A. M.	22		
Oct. 24	90	70	115	1675			24	20–40–0	
Oct. 29	90	70	115	1675	50	3:30P.M.	20	20–40–0	
Nov. 5	90	70	115	1675	80	3:30P.M.	14	20–40–0	
Nov. 13	90	70	115	1675	55	3:30P.M.	8	20–40–0	Digest. disturb.
Nov. 19	90	70	115	1675	100	5 P. M.	8	20–40–0	
Dec. 2	90	70	115	1675	113	5 P. M.	8	20–40–0	Weight, 126 lbs.
1928									
Jan. 5	90	70	115	1675	72	5 P. M.	52	20–40–0	Broke diet during Christmas holidays. Weight, 132 lbs.
Jan. 7	90	70	115	1675			40	20–40–0	
Jan. 24	90	70	115	1675	105	5 P. M.	22	20–40–0	Icterus ind. 7.0. Weight, 132 lbs.
Feb. 5	90	70	115	1675	112	5 P. M.	20	20–40–0	
March 2	90	70	115	1675	118	5 P. M.	16	20–40–0	
April 4	90	70	115	1675	116	5 P. M.	16	20–40–0	Van den Bergh: neg. Icterus index 0.5.
April 24	90	70	115	1675			16	20–40–0	Weight, 130 lbs.

*Supplied by E. R. Squibb and Sons, New York City.

substance, glukhorment, sponsored by von Noorden.[8] The Horment Company, who are the manufacturers, assured Professor von Noorden that the substance was free from synthalin and other guanidine derivatives. British and Czecho-Slovakian investigators have subsequently shown that the material is either synthalin or some other guanidine preparation. In a recent address, von Noorden indicated that a hoax had been perpetrated and that the drug was evidently not the result of decomposition of pancreas as claimed by the manufacturers.

TABLE II

Summary of Results Obtained from the Use of Synthalin.*

ADULTS

Case	Insulin		No. of Days	Digestive Disturbance	Final Disposition†
	From	To			
ADULTS:					
Mrs. B.	54	36	5	Yes	Discontinued
Mrs. H.	36	16	11	Yes	Discontinued
Miss K.	28	0	37	Marked	Discontinued
Miss A.	30	8	67	Slight	Continues drug
Miss S.	30	0	95	Slight	Continues drug
CHILDREN:					
W. D.	9	2	15	Slight	Continues drug
W. A.	70	70	150	Yes	Stops use of drug occasionally; mother feels that it prevents reactions.

*Supplied by Eli Lilly & Co., Indianapolis.
†Since this article went to press, the use of the drug has been discontinued in each case.

None of the drugs described for oral administration in the treatment of diabetes add anything of great value to the physician, and their only benefit can be to the patient, who may be relieved of one or more injections of insulin daily as a result of their use. They cannot be considered as true substitutes for insulin, and should not be depended upon or used in the presence of acidosis or infection. In other words, insulin still remains the drug of choice, although the recent advances in the preparation of such substances as synthalin and myrtillin give us hope that more effective oral therapy in this disease in place of the hypodermic use of insulin will not be far off.

Conclusions

1. Provided competent supervision and treatment is available, the age span of the diabetic should be as long as the non-diabetic.

2. Diet, insulin, education and exercise are the most valuable aids in the treatment of diabetes.

3. Synthalin and myrtillin are effective by mouth in lowering blood sugar, but are not to be classed as substitutes for insulin in the present state of our knowledge. There is reason to believe that other and more effective oral therapy will be forthcoming.

References.

1. Gray, H.: Diabetic Diets in Grams per Kilogram of Body Weight, *J. A. M. A.*, 84:14, Jan. 3, 1925.

2. Joslin, E. P.: End-Results in the Treatment of Diabetes Mellitus in Children, *J. A. M. A.*, 88:28, Jan. 1, 1927.

3. Watanabe, C. K.: Influence of Injected Guanidine Hydrochloride, *J. Biol. Chem.* 33:253, Feb., 1918.

4. Frank, E., Nothmann, M., and Wagner, A.: Uber synthethisch dargestellte Köper mit insulinartiger Wirkung auf den normalen und diabetischen Organismus, *Klin. Wchnschr.*, 5:2100, Nov. 5, 1926.

5. Blatherwick, N. R.: Sahyun, M., and Hill, E.: Some Effects of Synthalin on Metabolism, *J. Biol. Chem.*, 75:671, Dec., 1927.

6. Hornung, S: Synthalin und Leberschädigung, *Klin. Wchnschr.*, 7:69, Jan. 8, 1928.

7. Allen, F. J.: Blueberry Leaf Extract, *J. A. M. A.*, 89:1577, Nov. 5, 1927.

8. Von Noorden, C: Ueber eine neue, in Köper vorgebildete, antiglykodurisch wirkende Substanz (genannt: Glukorment), *Klin. Wchnschr.*, 6:1041, May 28, 1927.

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OPHTHALMIC AIDS IN GENERAL DIAGNOSIS.*

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In preparing a paper for this meeting it has been my purpose to produce something that would be of interest and help to the profession in general. The subject I have chosen is a very broad one. A volume could readily be written about it and necessarily I must touch only some outstanding essentials.

During the last few years methods of diagnosis have become increasingly complicated, and the tendency has been to rely more and more upon laboratory tests, and to some extent neglect a careful examination of the eyes.

There are a number of external eye changes that are very significant in general diagnosis and I shall mention some of them briefly. In closing the eyes, lagging of the upper lids may cause a suspicion of Graves' disease; also a bilateral exophthalmos, unless it be quite marked, may be missed by the examining physician. Protrusion of one eye, even if of slight degree, is very noticeable and may result from several causes, such as tumor, abscess of the orbit, sinus disease, thrombosis of the cavernous sinus, or aneurism of the ophthalmic artery.

Recurrent subconjunctival hemorrhages in persons advancing in age are often an indication of arteriosclerosis. Puffiness of the eyelids may be due to nephritis or arsenical poisoning. Jaundice of the sclera indicates obstruction of the common bile duct, infection or sclerosis of the liver. Corneal scars or opacities indicate previous injuries or inflammations and, if bilateral and diffuse over the greater portion of the cornea, are generally the result of congenital syphilis.

Diplopia indicates a lack of co-ordination of the eye muscles, and if a finger or pencil is moved from side to side, up or down in front of the eyes, a paralysis or partial paralysis of one or more of the eye muscles can readily be observed. This condition suggests several possibilities in diagnosis. Syphilis perhaps claims first attention. Brain tumor, multiple sclerosis, meningitis, encephalitis are often causes of this condition. I have in my own practice observed three or four cases of diplopia with paralysis of one of the eye muscles (generally the external rectus, which is supplied by the sixth nerve) where it was caused by diabetes. In all these cases the diplopia and paralysis were promptly relieved when appropriate treatment was instituted.

Nystagmus is a spasmodic condition of the eye muscles characterized by rhythmic oscillations of the eyeballs. The movements may be horizontal, vertical or rotary. The discovery of this condition arouses a number of questions as to its cause. It may be congenital, due to defects of vision or albinism, or it may be acquired, such as found in miners, or may be due to labyrinthine pressure, or vestibular nerve irritation. It is frequently seen in multiple sclerosis.

Most medical men are quite familiar with the pupillary reaction, and in a general physical examination its reaction to light and accommodation is always noted. The size of the pupil in health varies with exposure to light and with accommodation and convergence. It is influenced by age, the color of the iris and the refraction of the eye. The pupil is a little smaller in old age, blue or gray eyes and in eyes with hyperopic refraction. The size and reaction of the pupil is also influenced by the action of certain drugs, ocular disease, where light perception is reduced, spinal or sympathetic lesions, localized cerebral lesions in special centers or tracts.

The pupil is dilated in ocular disease, such as glaucoma, atrophy of the optic nerve, or orbital disease, due to non-conductivity of light, mydriatic drugs, also in fright, emotion, anemia, vomiting, depressed nervous tone, aortic insufficiency, irritation of the cervical sympathetic, etc. The pupil is contracted in congestion of the iris, paralysis of the sympathetic, and also of the fifth nerve, in certain fevers, plethora, venous obstruction, mitral disease and under the influence of myotic drugs. All medical men are familiar with the Argyll-Robertson pupil (or reflex iridoplegia) where the pupil does not respond to light, but does respond to accommodation and convergence.

Unequal pupils are rarely seen in health and one must always keep in mind that a mydriatic may have been used. Inequality may also be due to difference in refraction of the eyes, lowered vision or blindness of one eye, traumatism or cerebral disease. Varying inequality of the pupils is considered a premonitory symptom of insanity. Rhythmical contrac-

*Read before the Baltimore City Medical Society, October 5, 1928.

tion and dilatation of the pupil occurring without alteration of illumination or fixation is known as "Hippus". This peculiar phenomena is sometimes seen in cerebrospinal sclerosis, neurasthenia, hysteria, epilepsy and in the early stage of acute meningitis.

Inflammations of the iris present a problem in which the internist and ophthalmologist may well co-operate in determining the cause. They are generally a manifestation of syphilis, focal infection or diabetes. The diagnosis of an iritis should be made carefully, and this condition differentiated from a conjunctivitis when the inflammation is local and confined to the conjunctiva; also from glaucoma where the inflammation involves the deeper structures. Iritis is characterized by a medium or small pupil, early tendency to formation of posterior synechia with pigment proliferation at the pupillary margin. The iris soon changes in color and has a muddy infiltrated appearance; the gray iris becomes greenish in color. There is circumcorneal injection and the eye usually has marked ciliary tenderness.

In glaucoma the pupil is usually dilated, and does not react well to light. The tension is noticeably increased, especially in the inflammatory varieties when the cornea is steamy and the vision blurred. In conjunctivitis the inflammation is confined to this structure and the pupil remains active; there is no changed color of iris and the vision is unimpaired. A proper diagnosis between these conditions is most essential, especially between iritis and glaucoma. In iritis it is most necessary to use atropine to dilate, and keep dilated, the pupil, while in glaucoma eserine or pilocarpine is used to contract the pupil, and in many instances will rather promptly relieve the pain and other acute symptoms of the disease.

To make the mistake of using atropine or any mydriatic drug in glaucoma is always a serious one, as it promptly aggravates the condition, increases all the symptoms and sometimes causes the loss of vision. I have gone into this condition at some length for the reason that we are occasionally seeing cases where this mistake has been made.

Opacities of the cornea are always noted. They may be the result of wounds of the cornea, ulcerations or inflammations, or may be the remains of deep inflammations resulting from the interstitial keratitis of inherited syphilis. When they cover any part of the pupillary area they interfere with vision to a lesser or greater extent.

The visual fields are helpful in diagnosis when they are defective. The normal field of each eye extends temporally 90°, nasally 60°, above 55°, below 70°. The fields for colors, of course, are much less in extent, blue, red, green, respectively, in size. The visual field is soon affected in cases of glaucoma; the contraction is general but most marked in the nasal field, and in many instances, unless the condition is controlled, the contraction in the nasal field continues until it involves the central fixation point, when, of course, useful vision is lost. Hemorrhages or exudates in the fundus produce a blind spot in the field corresponding to the area of their location. A lesion in the right or left optic tract back of the chiasm will produce a *hemianopia* or half vision. If it is located on the right side it will blot out the nasal field of the right eye and the temporal field of the left eye and *vice versa*. If a lesion be located in the chiasm, the function of the decussating fibers to the nasal side of each retina will be cut off and the opposite fields, temporal fields, will be blind bi-temporal hemianopia. If the lateral fibers of the optic tract on both sides of the chiasm be co-incidentally involved, the temporal halves of the retina would be cut off and a bi-nasal hemianopia would result. A lesion such as traumatism or pressure on the nerve located between the chiasm and the eyeball will produce blindness of that eye.

In conditions where the sinuses are affected, the blind spot is often altered and enlarged and central vision may be reduced by the appearance, first, of a relative, and, later, an absolute scotoma. The above conditions are also often met with in cases of neuro-syphilis, traumatism, hemorrhages, intra-cranial pressure due to tumors and other lesions, and a careful mapping of the visual fields will be a great help in the diagnosis.

Careful examination of the eye-grounds generally is a great help in diagnosis, and this is accomplished by use of the ophthalmoscope. The use of this instrument is no longer confined to the ophthalmologist but is very generally used by medical men, especially by the internist and psychiatrist. The invention of the electric ophthalmoscope has to some ex-

tent simplified its use and most medical men can use it and get some help in diagnosis from it.

In the use of this instrument one must naturally at first thoroughly familiarize himself with the appearance of the normal fundus, as it is often a question whether changes or different conditions are physiological or pathological. With this instrument one is able to see and recognize changes in the crystalline lens, vitreous humor, the condition of the optic nerve head or papillae, the blood vessels; also, to see hemorrhages and exudates, tumors, detachments of the retina and occasionally foreign bodies. Most of these conditions are manifestations of other body changes and diseases and the change in the eye is only a local manifestation of the disease.

Changes in the optic nerve head or papillae may be a change in color anywhere from a pallor to a distinct atrophy. There may be congestion, indicating a low grade of inflammation, or this may be more severe with swelling, indicating a definite optic neuritis, and this may be still more pronounced, indicating a definite condition of choked disk. The margins of the disk may be clear cut, or in low grade inflammations they will be indistinct and sometimes fade into the surrounding retina so that one cannot tell where nerve ends and retina begins.

Most all of you are familiar with the picture of a choked disk, always indicating an abnormal intra-cranial pressure. Brain tumors sooner or later, due to pressure, cause choked disk. This condition may also be produced by brain abscess, meningitis, fracture of the skull, sinus thrombosis, gummata, etc. Sometimes it is a fairly difficult matter to definitely say whether you have a choked disk or an optic neuritis. The essential points of difference are, in choked disk the veins are very full, usually tortuous while the arteries are small and contracted. In optic neuritis the arteries are usually normal and the veins full. The elevation of the nerve head, due to the swelling in choked disk, is usually much greater than in optic neuritis. The vision in optic neuritis usually becomes impaired (central scotoma) early in the disease, while in choked disk it may remain normal or nearly normal for a long time.

Changes in the blood vessels are always looked for and noted. No where else in the body can the blood vessels be seen so clearly, and here they are very accessible for direct observation. The changes in the vessels themselves are so prominent that they often explain definitely a clinical picture. Changes are to be noted in the caliber of the vessels, contractions, dilatations, differences in the proportionate caliber of the arteries and veins. Changes in color should also be noted, such as accompanying white stripes, transformation into white cords, and infiltrates in and over the vessels. Also to be noted are the number and arrangement of vessels, their course—whether tortuous, wavy or broken, the reflex, its breadth and intensity, also the phenomena of pulsation.

Pulsation of the retinal veins is considered a normal phenomena and is most distinctly seen on the disk where they descend into the normal physiological excavation. The retinal arterial pulse is always to be regarded as pathological. It indicates either an abnormally high blood pressure, high pressure wave in the arterial system, as in cardiac hypertrophy, aortic insufficiency, aneurism of the aortia or carotid, or an abnormally low blood pressure, as after great loss of blood, syncope, and, finally, in glaucoma due to increased intra-ocular tension.

I wish now to consider some changes as seen in the retina and choroid, namely, hemorrhages, spots, exudates and pigment changes. The nutrition of the retina is derived from two sources: the central artery of the retina supplies the inner or cerebral layers, while the outer nerve layer and pigment epithelium is supplied by vessels from the choroid. This blood supply is of some clinical importance for the reason that it helps to determine finer points in diagnosis. The appearance of pigment stains or accumulations of pigment in the retina would indicate disease of its outer layers or of the retina and choroid, such as a chorioretinitis, while changes in the retina without involvement of the pigment indicate involvement and disease of its inner layers.

Hemorrhages are possibly the most important of the changes in the retina, and when injuries, glaucoma or high degrees of myopia are excluded, they are always considered to be a sign of general disease. They are a signal of warning that something is out of order in the system and a very careful general examina-

tion is demanded. Hemorrhages may be very small, such that they can only be detected through the dilated pupil and direct method of examination, or they may be large and massive, making the fundus look almost like a lake of blood. Usually fine striped hemorrhages which radiate from the papillae lie quite superficial, while round or lumpy ones are more generally in the middle or deep layers. The location of hemorrhages should be noted, their relation to the papillae, the macula and to the large vessels, or whether they are in the vitreous. Small hemorrhages come from the capillaries while large ones come from the larger vessels. It is impossible to differentiate between a venous and an arterial hemorrhage. Hemorrhages of a bright red color are recent ones, while older hemorrhages are usually of a dark or brownish tint.

The absorption of hemorrhages takes place slowly and they often disappear without leaving a trace as to their location. Occasionally white spots or pigment traces remain to tell their location. Isolated hemorrhages in the macula region are usually arteriosclerotic in origin if they are not due to traumatism or high myopia. Small shuttle-like hemorrhages that have a white spot in the center are generally caused by diseases of the blood, such as anemia and leucocythemia.

Among the principal causes of retinal hemorrhage, the one that should be mentioned first is traumatism, such as contusions or wounds. They are also found after body injuries, such as compressions of the thorax. One of the most important causes of retinal hemorrhage is arteriosclerosis and in these cases they are of great prognostic importance as they are often forerunners of cerebral hemorrhage. Nephritis and diabetes are very important causes both of small and large hemorrhages, and these hemorrhages usually appear at the same time with white spots.

In the case of nephritis the spots are white fat-like deposits and are generally arranged in the macula region in the shape of a star-like figure. Diabetes can, and often does, produce a picture quite similar to that caused by nephritis because the anatomical basis of the change is the same. Syphilis is also a cause of retinal hemorrhage, but other manifestations of this disease are always present and contribute most in making a diagnosis. Diseases of the blood, as previously mentioned, anemia and leucocythemia, are causes of retinal hemorrhage. Hemorrhagic diathesis as well as purpura and scurvy occasionally cause retinal hemorrhages; also, they are occasionally seen in the acute infectious diseases, such as malaria, typhoid fever, influenza, etc.

A very striking picture of the eye-ground is produced in occlusion or thrombosis of the central retinal vein when the hemorrhages are many, large and striated, covering up many of the blood vessels and other details of the fundus. In striking contrast to this picture is the one seen when there is an occlusion or thrombus of the central artery of the retina, where the retina is ischemic, some edema present, blood vessels, especially arteries, small or obliterated, and there is present a cherry red spot in the macula region. In the former condition of occlusion of the central retinal vein, the vision is usually very greatly reduced, but in many cases useful vision may be retained, while in the latter condition of occlusion of the central artery of the retina blindness is complete and comes on very suddenly. A few cases of this latter condition are reported when a small sector of vision was retained due to blood supply from a cilioretinal artery.

The vascular supply of the choroid is through the so-called ciliary vessels which come from the ophthalmic artery. The venous outflow from the choroid is quite different from its arterial supply, as its veins carry away not only the blood from the choroid itself, but also that from the ciliary body and iris. In pathological changes in the choroid we see changes in the blood vessels, pigment changes and spots similarly as I have described in the retina. Practically all diseases of the choroid are symptomatic of general disease with the exception of those that are congenital or due to myopia or traumatism. If white spots or black pigment changes are present, a thorough examination should be made and this should include a Wassermann and tuberculin test. If sclerosed vessels are present in the choroid, the probable cause of the disease is either syphilis, arteriosclerosis or nephritis.

Many of the signs and symptoms as revealed by a careful examination of the eyes are definite and point to an exact diagnosis, while others are only clues to be followed up and proven or disproven by further study.

512 *Cathedral Street.*

PREVENTION WILL BE THE WATCH-WORD.*

By J. L. EARLY, M. D., East Radford, Va.

Before presenting the subject of this paper, I wish to express to the Southwestern Virginia Medical Society my appreciation of the honor conferred upon me in being selected as your president for the past year. I wish to thank our very efficient Secretary-Treasurer, Dr. E. G. Gill, and the various committees for the assistance given me, and to assure the whole Society of my appreciation of their support.

According to figures compiled by the Public Health Service and of the American Red Cross, illness brings to the physicians of the United States $1,500,000 daily. A survey of 1,200 families, by the Department of Labor, reveals that the average annual expenditure for illness was $60.00.

There are $5,000,000,000 worth of hospitals in the country and their daily maintenance is $3,000,000. Two per cent of the population are incapacitated by illness and more than half are suffering from some kind of ailment.

The answer to the high cost of sickness in the United States is prevention, which must be elevated to the same plane as cure. Although the American public is emphatically aware of the startling improvements in such fields as aviation and television, to name only two of the many spheres of scientific progress, few persons realize more than vaguely the gigantic stride which medical science has taken in the last century.

Medicine, once an art, is now not only a science but daily an increasingly exact one. Disease, the dread enemy of a thousand years, is at last beating a retreat before the combined forces of research and experimentation.

A hundred years ago, even fifty, smallpox was a scourge, which swept away great numbers of people. As such it was accepted and its treatment, if such it could be called, was empirical at best. Today, due to the almost universal adoption of vaccination, smallpox is a rarity, found only in isolated, ignorant communities.

Cholera, once brought to ports by sailors from foreign shores is even more rare than smallpox, due to health laws, rigid sanitation enforcement and quarantine examinations of all incoming passengers and crews.

Another retreating figure of distress and sorrow, not yet wiped out but distinctly on the wane, which has claimed its millions among children, is diphtheria, now preventable by inoculation.

Scarlet fever, measles, mumps, tonsillitis, croup—all fearsome diseases of childhood—stand at bay before either improved methods of cure or prevention.

Among adults, such complaints as diabetes, now successfully treated by insulin and a regulated diet, whereas it was formerly usually fatal, and rheumatism, now recognized to have in each case an individual underlying cause requiring individual methods of treatment rather than a shrug of the shoulders and a resignation to fate, are fast being conquered.

When grandmother caught a cold, she let it go at that, but today colds are known to have as many causes as there are hairs on grandson's head and are cured or alleviated accordingly. Some colds are, as it was formerly supposed all were, caused by sitting in a draft, but, among reputable physicians of the present day, it is held with conviction that a cold is more apt to be caused by wrong diet, or improper health surroundings, or by inhaling the germs shed by some one already infected, than by "bad night air" or a severe cold. Another cause of colds now generally accepted in step with the spirit of modern times and dress is the wearing of too much clothing or the use of too many bedclothes at night. Colds are now treated more and more by resting, and sleep and diet correction, rather than by patent medicines and the "physic" and "home remedies" so beloved of yore.

It is possible that in the future, by the proper regulation of diet of both mother and child, the extensive loss of teeth in children and the diseases causing their decay will be eliminated. The question of diet, so long the subject of feminine conversation and query, is more accurately understood than ever before. It is recognized that each individual requires an individual diet. By means of blood chemistry, an embryonic but apparently revolutionary branch of medical science, a man's blood, blood pressure and urine are subjected to a more defined and exact analysis than ever before.

Surgery is now safer, not only because of the improved antiseptic facilities, but also because surgeons know better how to operate. More things are now accomplished by modern surgeons than the early and middle nineteenth

*President's address before the Southwestern Virginia Medical Society in Wytheville, September 27-28, 1928.

century disciples of Hippocrates ever dreamed would be. Appendicitis operations are no longer a bait for joke magazines, nor are they viewed with mid-Victorian terror, but are recognized, except in acute and neglected cases, as necessary life-saving operations. The public realizes that millions formerly died of disease and conditions now cured by the surgeon's knife.

Eyesight is improved and blindness prevented by modern eye surgery and the entire body is subjected to the scapel with beneficial results. The World War experiences have added immeasurably to the known results in facial surgery and bone and jaw relineation.

Perhaps the greatest advance in modern medicine is in the field of diagnosis. Diagnosis, now as mentioned before, closely allied to blood chemistry, calls for even more than that; it means today that if a person is suffering from some apparently local complaint, such as stomachache, a headache, or neuralgia, his symptoms of pain, fatigue and what not are of course thoroughly gone into, and his whole body is subjected to a thorough examination by experts in each portion of it. Particular attention is paid to his eyes, teeth, digestive tract, and his medical history.

The chief problem of the future in medicine, save for the stamping out of known dangerous diseases and the prevention of new ones, is the prolongation of human life. To this end alone —after all, the chief one of the medical profession—millions of dollars and years of time, as well as tons of brain, sinew and struggle are being devoted by countless quiet unassuming scientists and physicians, who work silently but persistently for the good of humanity and the glory of science. In line with the general improvement of medicine in all of its branches is the constant campaign being urged by the American Medical Association and many other physicians and societies to enlighten the public, keep it healthy, and prevent recourse to the many charlatans and quacks who, quick to seize upon a man when he is ill, defraud him of his money and shorten his life. And hand in hand with medicine's advance, the public's increase in common sense has marched.

Elbert Hubbard has said, "That ignorance and sin supply the three learned professions their excuse for being." Certainly physicians are daily faced with ample evidence that ignorance of hygienic laws and some of the results of sin create the illnesses we are called upon to treat. As sin and ignorance disappear from the world, so too will the need of our services be lessened each decade. It is possible for us to conceive of our society progressing to the extent where sin and ignorance are practically extinct, as are witchcraft, slavery and torture. In such society there would be very little need for members of the three learned professions. When business men stifle their greed and cease to squabble, the lawyer finds his work gone. When man understands God, the need of a professional interpreter diminishes and when folks are fully educated on matters of health and hygiene, when laboratories have wiped out disease and plagues, then our work in mending and treating and curing shall have ended.

This is, of course, in the far distant future. Society though has made more progress in that way in the last ten years than in the last thousand. Enough progress has been made that a certain per cent of the ailing public no longer ails. In a world which no longer needs the lawyer, clergyman or doctor, the teacher will still be needed. Teachers not only of language, mathematics and chemistry; not alone of music and arts; not alone of the graces —but teachers of health.

The physician of the future will be not only a curer of the sick but a teacher of health.

Preventive medicine will be the vogue. Prevention will be the watchword.

THE INCIDENCE OF INFLUENZA AT BLUE RIDGE SANATORIUM DURING THE EPIDEMIC, DECEMBER AND JANUARY, 1928-1929

By
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and
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As the present influenza epidemic began to spread and get near, we realized that every precaution should be taken to prevent its spread among the personnel and patients of the institution. It is a well known fact that during the epidemic of 1918-19 the morbidity as well as the mortality of tuberculosis was increased. Also, we realized that the institution represents an educational factor in the public health problem and we were especially anxious that the lowest possible incidence should occur.

With these points in mind, the nurses and

employees were advised to stay away from Charlottesville just before and during the Christmas holidays as it was reported that there were about fifteen hundred cases there during that time. In a talk to the colored employees they were especially urged to stay away from crowds or places where influenza was present and instructed to cover the mouth and nose with a handkerchief when coughing and sneezing. The patients were assembled and a talk given them on how the disease is spread and the prevention of it was gone into in detail. They were advised to urge upon their relatives and friends not to visit them until the epidemic was over. Shortly following this the patients were again talked to on this disease and the former points further emphasized, and in addition to this they were given a leaflet provided by the State Board of Health headed, "Protect Yourself and Others Against Influenza," this leaflet to be sent with their mail to the relatives and friends throughout the State. Large placards were made which had printed on them the methods necessary to prevent influenza and posted throughout the buildings of the Sanatorium. All visitors to the Sanatorium before being permitted to see the patients were seen in person by a nurse or doctor and questioned closely as to whether they had been exposed to influenza or if they had at the time a cough or symptoms of a recent cold.

Patients have been admitted all the time during the epidemic but have been isolated for four or five days after admission. None of these cases, we are glad to say, developed the disease.

Of the thirty-two cases we have had here, twelve have occurred among the staff and nurses; four in the white employees; nine in the colored employees, and seven in the patient body. The cases occurring in the patients have been traced to a visitor on Christmas day who was said to have had a mild attack. It is gratifying to know that the training that has been given the patients in preventing the spread of spit-borne diseases has produced such good results during this epidemic. Only 2.6 per cent of the patients so far have contracted the disease.

Symptoms

The symptomatology varied some but as a whole was as follows: The onset was acute in most cases, though in a few cases listed as slight in the table, it seemed to be gradual. The subacute cases being mostly the ambulant form, the symptoms were not so easily recognized. In the cases with acute onset there was usually noted at first a burning, dry and raw sensation in the pharynx and trachea. This was soon followed by a dry non-productive cough accompanied by a sensation of constriction and pulling in the substernal region. This was thought to be due to a tracheitis. There was also generalized aching with a preference for the back and head. Within a period of six hours, as will be noted by the temperature curves, the temperature rose from one to three degrees on day of onset and continued to rise until in the moderate and severe cases it reached 102 to 103 on the second or third day. At this point it began to decline until on about the eighth day it was normal. The curve of the temperature all along shows the highest readings in the afternoon and evening, except on the fourth day when both groups showed a drop in the evening. Following the onset the cough soon became productive and the constriction and pulling in the region of the trachea and bronchi were lessened. The appetite was poor from the onset until convalescence became established; especially, late in the disease there was a distaste for food and water. There was no diarrhea and very little constipation. Three cases had some vomiting on the first and second day when temperature was at its height. Aside from these the patients were comparatively free from gastro-intestinal disturbances. No central nervous system disturbances were noted. Urinalyses were not done on all of these cases, but were within normal limits on those done.

Unfortunately, complete blood work was not done on all the thirty-two patients listed in this report and is not available for complete study. However, we do feel that the work listed in the table is of definite value and brings out certain important features. Of the seven tuberculous patients in the Sanatorium who had influenza, complete blood work was done before, during and after the attack. In addition to these, three nurses had blood work done on them during the disease and within eight to ten days after. Thus there are listed seven cases having had blood work done on them before the disease and ten cases during third or fourth day of attack, and the same ten cases with blood studies repeated dur-

ing convalescence. To make this work of greater value it may be added that the entire list including patients and nurses either have tuberculosis or are strongly suspicious.

An analysis of this work reveals the following: Hemoglobin dropped during the disease 1½ per cent but during recuperation there was an increase of 2½ per cent over that observed during the height of the attack. The total white cell count harmonizes with the reports of other observers; namely, that there is a decrease in the number of leucocytes. Only two of the cases had a total white count to exceed 10,000 and one of these occurred in the pneumonia patient, the other in a case of artificial pneumothorax who had pleural effusion previous to the influenzal attack. Had these cases been omitted there would have been a more noticeable decrease in the white cell count during the course of the disease. In spite of this there was a reduction of almost 1,000 cells during the attack which was not regained during recuperation. In the differential count there was a fall of 7.5 cells in the polys, and while this was slightly increased during recuperation it did not get back to what it had been previous to the attack. The small lymphocytes showed a slight increase and continued to rise during convalescence. The large lymphocytes showed an increase of about 3 cells during the attack, but unlike the small lymphocytes they showed a decrease of eight or ten days after the influenzal attack. Perhaps the most noticeable change in the entire work was seen in the transitional count. These cells were increased from 1 per cent before to 4.5 per cent during the disease, but rapidly approached the point of normalcy during convalescence. The eosinophiles showed a slight reduction and this was not regained afterwards.

It may be inferred from these results that there is a reduction in hemoglobin, white blood cell count and polys during an attack of influenza in tuberculous individuals. However, the small and large lymphocytes, and the transitional cells show an increase. Whether it is a coincidence or of definite clinical significance it is noteworthy that the small lymphocytes continued to rise during convalescence. It is now believed by some observers that the lymphocyte count represents a clinical index to the resistance of the patient with tuberculosis. Cunningham, Sabin, Sugiyama and Kindwall (Transactions of the Annual Meeting of the National Tuberculosis Association, 1925 and *American Review Tuberculosis*, June, 1928) found by inoculation of rabbits, and later confirmed on patients, that in progressive tuberculosis the number of circulating monocytes (transitional cells?) increased and the number of the lymphocytes decreased. They found the reverse to be true when the animals were recovering. If this work of Cunningham, *et al*, be correct it would seem that our observations are of some definite value and it would be of interest to make further studies on a larger series of cases. It would be extremely interesting to compare this feature of the blood work with observations made on non-tuberculous individuals who had influenza.

BLOOD WORK TABLE

On Admission	Hb. %	W. B. C.	P. M. N. %	S. L. %	L. L. %	T. %	E. %	B. %
Seven cases	83 2-3	8,640	74	19	6	1	1 1-3	0
During Influenza (3rd to 4th day of attack) Ten cases	82 2-9	8,000	66 1-2	20 1-2	8 2-3	4 5-12	7-10	0
Recuperating. (8 to 10 days after influenza) Ten cases	85	7,400	69 3-10	22 4-10	7 1-10	1 7-10	4-10	0

Complications and Sequelae

Complications and sequelae occurred in seven of the influenza cases. This is 21¼ per cent. The most serious complication listed is pneumonia. This was of the bronchopneumonic type, of which one patient had a definite diagnosis, while four had a symptomatology highly suggestive. These are listed in the table as suspicious of bronchopneumonia.

The most serious sequela which occurred was relapse. This took place in two patients.

In addition to relapse one of these patients had acute bilateral antritis with epistaxis. (It might be of interest to know that this patient had arterial hypertension before developing influenza). The second attack of influenza in both patients was more serious than the first attack. One patient had as a sequela acute otitis media. Pleuritis occurred in one patient who was under treatment as a suspicious case of tuberculosis. It is of interest to note that of the seven patients in the Sanatorium under treatment for tuberculosis only one is listed in this group of complications and sequelae; the others being employees and personnel of the institution.

General Tabulation of Influenza Cases at Blue Ridge Sanitorium, December and January 1828-29

Patients	Mild (1-3 da.)	Moderate (6-10 da.)	Severe (6-10 da.)	Complications and Sequelae	Onset — Acute	Sub-acute	Sex M.	F.	Tuberculosis or other prev. disease
Staff and Nurses 12	1	9	2	Bronchopneumonia 1 Suspicion of Bronchopneumonia 2 Otitis Media, acute 1	10	2	11	1	Pulmonary T. B. Susp. 1 Min. 4 Mod. Adv. 2 Bronchiectasis 1
White Employees 4	3	0	1	Susp. Bronchopneumonia 1 Marked Relapse, with acute bilateral antritis and epistaxis 1	1	3	4	0	Mitral regurgitation and stenosis 1 Arterial hypertension 1
Colored Employees 9	3	4	2	Marked relapse, with susp. Bronchopneunonia 1	8	1	9	0	Diabetes mellitus 1
Patients in Sanatorium 7	4	1	2	Pleuritis 1	4	3	6	1	Susp. T. B. 2 Mod. Adv. 3 Far Adv. 2
Total 32									

NOTE: Three people living on farm, not employees, and not listed here, had "flu."

Treatment

The general treatment given these patients was to put them to bed as soon as the symptoms appeared and keep them at rest until at least two or three days after the temperature had become normal. Fluids were forced. Liquid and soft diet were given with an abundance of fruit juices. Sodium bicarbonate in twenty to thirty grain doses was given in a glass of water every three or four hours during the first two days to alkalinize the body fluids. Aspirin, grains ten, was given every three hours if aching was present and in some instances a dram of Aromatic Spirits of Ammonia was given with it. Cough sedative (mixture of Ammonium Bromide, Syrup Squill, Flext. Pruni. Virg. in simple Elixir) was used in doses of drams one every three hours for the cough.

Comments

Of the total number of cases twelve, or 37.5 per cent, were females, and twenty-one, or 62.5 per cent, were males. Of the seven patients in the Sanatorium having the disease six were males and one female. All listed under white employees were males. Also, all listed under colored employees were males. Under staff of the eleven listed, there were ten females and only one male. It is significant that none of the forty children in the institution had the disease. The average age instance is as follows: males, thirty-three years; females, thirty-two years. Of the males the youngest was seventeen years old, while the oldest was fifty-five years. Of the females the highest age limit was forty-two and the lowest twenty-two. Of the total number cases, fourteen or 43.4 per cent either had definite pulmonary tuberculosis or were

considered as "suspicious". Other diseased conditions existing before onset of influenza were: diabetes mellitus, one; arterial hypertension, one; mitral valve disease with cardiac hypertrophy, one; bronchiectasis, one.

Conclusions

1. From these observations in a limited number of cases it would seem that influenza occurring in tuberculous individuals who have high resistance as a result of Sanatorium treatment, get good results and are not done harm to any appreciable extent, if required to remain in bed for a fairly long period during convalescence.

2. There seems to be a characteristic temperature curve in this epidemic of influenza. On the day of onset the temperature rises from one to three degrees and continues to rise until it reaches 102 to 103 degrees on the second or third day in mild and severe cases. No exception was noted to this in tuberculous patients who were improving and otherwise doing all right.

3. As no controls were run it is not possible to say just what effect the administration of alkalies had. The standardized use of alkalies with salicylates in the treatment of influenza seems to be equally as efficacious in tuberculous individuals having the disease.

4. Of the blood work done on the small number of cases all having tuberculosis, the noticeable features were: leucopenia, reduction in polymorphonuclears to the extent of 10 per cent, and a definite increase in small lymphocytes which continued during recuperation. The large lymphocytes were slightly increased and what seems to be a noticeable feature is the increase in transitional cells (monocytes). These during the attack were increased three and one-half times.

5. Influenza is a spray-borne disease and the spread of it can be prevented by observing the two rules as advocated by the State Board of Health; namely, "Cover the mouth and nose with a handkerchief when sneezing and coughing, and keep objects such as, pencils, fingers, etc., which do not belong there out of the mouth". It was through these precautions and in addition to these, isolation, that there was a low incidence of influenza at Blue Ridge Sanatorium during the recent widespread epidemic. Only 2.6 per cent of the two hundred and seventy patients, and only 8.5 per cent of the entire Sanatorium

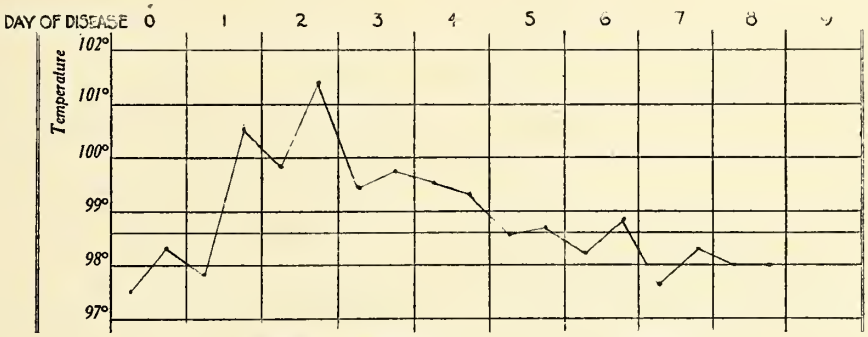

Fig. 1.—Composite Temperature Curve. Seven Tuberculosis Patients.

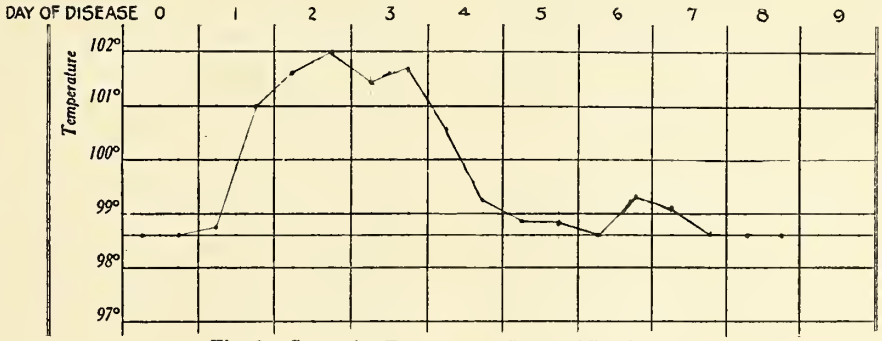

Fig. 2.—Composite Temperature Curve. Nine Nurses.

community, including patients, staff and employees, developed the disease.

Of the staff and employees 23.8 per cent developed the disease. It must be borne in mind, however, that they were exposed to the public more and were unable to protect themselves against the infection.

ANGINA PECTORIS.*

By K. D. GRAVES, M. D., Pearisburg, Va.

It is often profitable as well as interesting to take inventory of the facts and theories pertaining to certain diseases, in order to take advantage of any available information pertaining to them. It is with this purpose in mind that I approach the subject of angina pectoris.

The nomenclature is misleading, as all descriptions of the condition first state that it is a symptom rather than a disease entity; and then further qualify by ruling out the majority of cases of heart pain.

The symptom complex of angina pectoris occurs more frequently in males than females, in white than colored persons, and practically never in persons under forty years of age. It is always serious. It is rapidly increasing, as is shown by the following tables:

TABLE I.
Death Rate From Angina Pectoris in Virginia, Per 100,000

Year	White	Colored	Total
1923	11.24	6.16	9.34
1924	11.03	8.00	10.14
1925	11.96	8.56	10.94
1926	12.64	8.88	11.51
1927	13.78	11.13	13.04

TABLE II.
Death From Angina Pectoris per 100,000, All Ages, Metropolitan Life Insurance Co., Industrial Department

Year	White Male	White Female	Colored Male	Colored Female	Total
1923	7.0	4.7	5.7	6.1	5.7
1924	7.5	4.2	5.3	5.6	5.7
1925	8.1	5.1	6.7	7.2	6.5
1926	10.7	5.9	8.1	8.3	8.0
1927	11.4	6.2	8.4	7.8	8.4

It is very possible that these tables may be slightly misleading, as Mr. Dunbar, statistician for the Metropolitan Life Insurance Company, in a personal communication states that he considers that the increase is partly due to the fact that there is a tendency on the part of doctors to attribute deaths to angina pectoris which formerly have been classified as being due to acute indigestion.

The term does not include the heart pain in young persons, lasting from a few minutes to several days, never extremely severe, rarely dangerous, often relieved by exercise. I have been unable to find that young persons subject to such attacks are predisposed to attacks of angina vera. The term should include only cases having a feeling of constriction or oppression in the chest, great apprehension and a feeling of impending dissolution; with pain often excruciatingly severe, usually in the precordium but often in the abdomen, shoulder or elsewhere.

We would usually find it extremely difficult if not impossible to make a diagnosis of angina pectoris except for the subjective symptoms. Electrocardiographic studies are frequently negative, and at best are usually only suggestive rather than confirmatory. There are no consistent postmortem findings. Percussion, auscultation, palpation, and blood pressure readings are of little help. Because of the variability in objective findings considerable speculation has taken place over the mechanism of angina pectoris. Sir Clifford Albutt has taught for a long time that it is due to aortitis, and probably has nothing to do with heart disease. The theory which many of us learned at college, that it was due to constriction or blockage of one or more of the coronary vessels has lost adherents, owing to the wide variety of autopsy findings on these cases. Another theory is that it is due to a spasm of the coronary arteries, causing a local ischemia of the myocardium. The explanation of Reid[1] is fast gaining adherents, viz., that it is functional in the same sense as are the arrhythmias. Ordinarily, during exercise there is a dilatation of the peripheral blood vessels, thus draining the blood away from the heart. In Reid's opinion, angina pectoris may be due to failure of the peripheral vessels to dilate, thus causing a sudden rise of pressure of the first part of the aorta and the left ventricle. It is easy to explain by this theory how the vasodilators, such as the nitrites, afford relief.[2]

Treatment may be divided into medicinal

*Read at the meeting of the Southwestern Virginia Medical Society, in Wytheville, September 27-28, 1928.

and surgical. In the realm of drugs, the nitrites are probably unsupplanted. A number of operations have been devised, probably cervical sympathectomy being the most popular. At present, surgery is invoked usually only in cases of unbearable suffering; it affords relief to cases which survive it, but it is considered a last resort rather than a first resort. It is very possible that as surgery becomes more frequently resorted to, it may eventually be elaborated to such an extent that it will afford functional as well as symptomatic cures.

I wish to express my indebtedness for the statistics to Dr. W. A. Plecker, statistician for the Virginia Health Department and Mr. Louis Dunbar, statistician for the Metropolitan Life Insurance Company.

REFERENCES.

1. Reid, W. D. The Mechanism of Angina Pectoris. *Arch. of Int. Med.*, 34:137, Aug., 1927.
2. *J. A. M. A.* Editorial, 83:12, p. 925.

THE DIAGNOSIS OF PEPTIC ULCER OF STOMACH AND DUODENUM.

By O. EDWIN FINCH, M. D., Raleigh, N. C.
Mary Elizabeth Clinic.

A peptic ulcer is an ulceration involving the mucous membranes of the stomach or duodenum. It is also known as a simple ulcer and is usually circumscribed and does not involve a wide area of the mucous membranes.

As to etiology, the literature contains little more than it did 35 years ago. There are several theories as to cause. It has been set forth that peptic ulcer may be produced by gastric fluid, local nutritional disturbance, embolism, endarteritis, traumatism, anemia, hyperchlorhydria, bacterial infection and toxic substances. The various causes are yet debatable and will, perhaps, remain so for sometime.

There is one striking feature about peptic ulcer patients, and that is, some focal infection can be demonstrated in the majority of cases coming under our observation. To further support this, we have repeatedly noted improvement in symptoms referable to peptic ulcer when the focus or foci of infection have been removed. We regard this more than a coincidence as we have known it to occur in fully 75 per cent of all cases observed.

The season of the year has, in some manner, some influence, as we have observed more ulcer cases for first time in spring and early fall. Further, cases that are under observation and not fully arrested or cured, tend to relapse during these two seasons. The relapsed cases usually respond very readily to treatment.

Another interesting point in our experience is the patient will occasionally give history of having had, at intervals, attacks of ulcerative stomatitis, which consisted of small punched out ulcers on mucous membranes, the borders of which have a grayish color with a crater like inflammation in center, comparable to peptic ulcer.

We are unable to make a satisfactory explanation as to the relation of stomatitis to peptic ulcer. This coincidence has caused us to regard the focal infection idea as causes of peptic ulcer more plausible. We do not know.

Peptic ulcer is more prevalent between the ages of 20 and 35. As to sex, men are more frequently affected.

Pathology: As to location, the pathologist says the posterior wall of the stomach along the lesser curvature near the pylorus is the most frequent area involved. If in duodenum, it is located usually in the first three inches beyond the pyloric ring.

The pathology will, obviously, be dependent upon the state of ulceration, whether acute or chronic. The peptic ulcer is usually solitary, but may be multiple, and if many are present they are usually grouped closely together. The ulcer may be saucer-shaped, terraced or funnel-shaped. The lesion involving the mucosa is nearly always large: there is less destruction of tissue when the muscular layer is involved. The margins may be sharp, punched out in appearance. The floor of the ulcer may be muscle or serous layers, or some adjacent viscus. In case of perforation the amount of secondary pathology may be little or widespread. The possibility of carcinoma being superimposed on the site of the peptic ulcer is to be kept constantly in mind.

Undoubtedly many ulcers occur and heal without producing alarming clinical symptoms.

The various deformities that peptic ulcer may produce is dependent upon the duration, severity, and location. The principal deformities consist of pyloric stenosis, hour-glass contraction, and other deformities with or without perforation.

Symptoms: This is debatable and one may ask, first, what constitutes an ulcer symptom? In other words, what is an ulcer history? An ulcer may exist, be found post-mortem, and no symptoms ante-mortem.

The symptoms may be latent and only arise when there is perforation with associated peritonitis or fatal hemorrhage. Perforation may occur and produce no alarming symptoms, as has been revealed post-mortem—death being attributed to other causes, as acute infection.

We have had one patient in which his only symptom was that due to acute perforation while enjoying his midday meal. This ulcer was revealed three hours later by laparotomy. He states that he had no previous digestive disturbance: acute abdominal pain and shock were his warning of perforation. Therefore, it is not surprising that the profession cannot agree as to an all-enclosing "typical" history symptom-complex. Only can we classify an ulcer symptom when we regard the major symptoms as occur in those patients diagnosed ante-mortem or pre-operative. Therefore, the generally accepted ulcer symptoms are as follows:

1. *Pain.*—This may exist as an uneasy empty sensation to an acute agonizing paroxysm. Pain exists in about 90 per cent of all cases. It is most commonly located in epigastrium below the xiphoid cartilage, or 1 inch to the right of this area. This is dependent upon the location of ulcer. If to the right of the mid-line the pylorus or duodenum may be suspected. The pain is more commonly intermittent. It may be relieved or aggravated by food. The pain may occur at the height of digestion or two to four hours afterwards. When the pain is at its greatest intensity during the end of the digestion, an excess of hydrochloric acid may be suspected. In this event the taking of alkaline food, such as milk or albuminous food, will afford a certain amount of relief. Large amounts of heavy food frequently aggravate the pain. The pain is more frequently described as a "hunger pain." The patient forms a habit of taking some light food such as milk between his regular meals, also taking soda bicarbonate, or milk of magnesia, as this affords temporary relief. The pain may awaken him during the night, usually six to eight hours after his evening meal. Frequently the patient will have a glass of milk convenient to be taken during the night. The pain is usually a referred pain, a viscero-sensory reflex, and is not dependent on the organic changes in the gastric organ itself.

The characteristic feature about pain is its periodicity or regularity in which it occurs. Pain beginning one to three hours after meals, discontinuing one hour before next meal, suggests gastric ulcer. Pain beginning three to five hours after meals and continuing to next meal suggests duodenal ulcer.

2. *Loss of Weight and Strength.*—This we regard as next to pain in point of importance. We have seen cases in whom the outstanding symptoms were pain and loss of strength and weight. In spite of persistent inquiry these two symptoms were outstanding.

The patient will state he is eating more than ever, but in spite of this he continues to lose weight and strength. The loss of weight begins shortly after onset of pain in epigastrium. The weight loss is in proportion to the increasing frequency and severity of pain. It may be gradual, but each month or week there is some loss. There may be exceptions to this weight loss, but its prevalence is sufficient to list weight loss as a cardinal symptom. The weight may fluctuate, but in course of time a loss will be observed.

3. *Vomiting* may appear at weekly intervals, or it may be daily. It is usually preceded by pain. It may occur immediately after taking food or one to three hours later. The pain may be, and usually is, relieved by the act. The vomitus may consist of mucus, food, blood and highly acid fluid, depending upon time of occurrence with reference to time of taking food.

4. *Eructation* may occur immediately after taking food or during height of digestion. Frequently a sour or acid fluid is eructated, which produces a burning sensation in pharynx or substernal area, and is commonly referred to as "heart burn" or dyspepsia.

5. *Hematemesis*—or blood in vomitus—is the usual text-book symptom, but in our observation it is not frequent. Even in routine gastric analysis following Ewald meal, occult blood is rather rare. We are to keep in mind other causes for blood in vomitus, as the act of vomiting is a rather strenuous act. The effort may produce rupture of venules in the esophagus, pharynx or mouth, or from gingivitis and erosions. It is not advisable to depend upon the eye in studying vomitus, but chemical test should be made. When hematemesis is positive, it has considerable importance as an aid in making a diagnosis of gastric disease.

The test for occult blood is valuable only

after the patient has fasted for several hours, being careful to exclude other sources of blood, such as due to trauma or general systemic diseases. The quantity of blood may vary from a mere trace to a profuse and occasionally fatal hemorrhage. The symptoms will vary according to rapidity and amount of hemorrhage. The vomitus may be slight blood tinged, bright red to copious amount of coffee ground color, dependent upon frequency and amount of vomiting.

In acute ulcer the hemorrhage may be a spontaneous, alarming onset, without preceding history or symptoms. In chronic ulcer, the hemorrhage varies, while there is usually a history of chronic indigestion and a progressive anemia, and having previously vomited blood.

Blood when found in vomitus or in the stools, when other sources than peptic ulcer have been excluded, is a valuable aid in the diagnosis. Otherwise, it has no special significance.

With reference to symptoms, the essential factor is to develop the cardinal points in the history, for frequently the diagnosis can only be made in this way. Taken for granted that the symptoms are the so-called "typical of peptic ulcer," a diagnosis should never be undertaken without a thorough physical examination. In addition, the X-ray and laboratory study should be made in every patient, for the obvious reason that the diagnosis is arrived at by process of exclusion. Further, as previously stated in the etiology of peptic ulcer, focal infection is to be considered as a possible cause of peptic ulcer. The foci of infection, if present, should be recorded on the report.

Frequently the physical examination is negative. In fact, there are no outstanding signs produced by peptic ulcer. There is one sign that is present in a great majority—the presence of tenderness located in the mid-epigastrium. This is more common in gastric ulcer. If located one and one-half inches to the right of mid-epigastrium, it is more indicative of a pyloric or duodenal ulcer. No rule prevails as to referred sensory pain or tenderness to indicate which portion of stomach or duodenum is involved.

Occasionally deep palpation in this area will produce a dull aching sensation posteriorly at the angle of the left scapula. In atypical cases the tenderness may be diffuse, radiating in lesser intensity from the epigastrium. No tumor mass is ever palpable in acute ulcer. In chronic ulcer with considerable pathological change, much more may be found on examination, particularly should the patient be emaciated. In this event, gastro-enteroptosis may be expected and this is to be kept in mind with reference to location of the enclosed portion to be palpated. Should the ulceration be of long standing and symptoms of gastric stasis have been revealed, a dilatation of the stomach is to be expected.

Too much importance should not be given to the point of tenderness in epigastrium as at this point other conditions may be responsible by way of reflex.

X-ray examination is indispensable in properly studying these cases for peptic ulcer, and a final diagnosis should never be undertaken without its use. The examination should be made early in the morning before any food has been taken. This study should be made by a competent roentgenologist, as the shadows are not so evident that even "he who runs may read."

Final conclusions in the X-ray study should never be drawn until observed under the full physiological effects of atropin. This is especially important in acute ulcer and in nervous or excitable patients. Deformities, hypermotilities and muscular spasms will frequently disappear after the administration of atropin. Valuable information is made possible by a properly interpreted X-ray study.

Gastric analysis may show little. Whatever may be revealed, it is but one of the links in a chain leading to a diagnosis. The single test, or residue test as employed by some, we regard as a useless procedure, and fear it is used more for its psychological effect on the patient than for information obtained from the study of the gastric contents.

The fractional test is one of preference. The fasting residue should be withdrawn, after which an Ewald test-breakfast should be given; then specimens should be withdrawn every fifteen minutes for a period of two hours and laboratory study made. There are no typical findings, but here we have material to study.

A diagnosis of peptic ulcer cannot be made by gastric analysis. The acidity may, and usually does, vary from a low to very high acidity. Free hydrochloric acid may, in atypi-

cal and chronic cases, be absent. The presence of lactic acid is suggestive of stagnation from obstruction.

We do not permit the results of gastric analysis to influence us either way in arriving at our final conclusion, unless there is other corroborative evidence in our study.

SUMMARY.

The final diagnosis is to be based on the following:

1. A careful and detailed history relating to digestive disturbances, as developed in symptoms of (a) pain in mid-epigastrium, varying in intensity from an uneasy feeling to sharp agonizing, boring pain, occurring at regular intervals, which may be relieved by taking of an alkali or some food, such as milk; (b) loss of weight and strength—gradual but progressive in proportion to other cardinal symptoms; (c) nausea and vomiting, usually associated with pain or taking of heavy foods, and this may occur immediately following a meal or during active digestion; (d) eructation, or so-called heartburn attacks; (e) hematemesis, or blood in the vomitus, varies in amount and frequency, but its presence may be important and significant.

2. Thorough physical examination, demonstrating usually an area of tenderness in mid-epigastrium. The presence of a focus or foci of infection likewise has to be borne in mind.

3. Fractional gastric analyses after an Ewald test meal, specimens to be obtained every fifteen minutes through a period of two hours.

4. Fluoroscopic and X-ray study before and after atropine medication.

TOXIN-ANTITOXIN.*

By J. A. NOBLIN, M. D., East Radford, Va.

Diphtheria today is known to be both curable and preventable. This seems almost incredible to many people, for only thirty years ago death claimed more than one-third of those attacked by the disease, and effective preventive means were unknown. This advance in medical knowledge stands as one of the major medical triumphs of all time.

For the protection of children there is a mixture known as toxin-antitoxin, which wide experience has proved to be effective in the prevention of diphtheria. Investigators found that by mixing diphtheria toxin with the right amount of antitoxin, the two neutralize each other so that the mixture is harmless. At the same time the toxin retains the capacity to stimulate the living body to produce its own antitoxin.

In 1913, after research workers had acquired considerable skill in the preparation and use of toxin-antitoxin, it was first used to immunize children against diphtheria.

The course of treatment is three doses of 1 c.c. each, given one week apart, and it requires two to six months before protection becomes complete. This protection lasts for years, perhaps for life.

By the use of a test devised by Dr. Schick, of Vienna, in 1913, we have a simple means of determining whether a person is susceptible to diphtheria. A very small amount of diphtheria toxin is injected into the skin: if the one tested is susceptible, the injection of the toxin will produce a slight local irritation, shown by a redness that develops in twenty-four to forty-eight hours. If not susceptible, no effect will be produced by the injection.

The use of this test has given us valuable information. It has shown that infants up to the age of six months are usually immune, and that children from nine months to six years are in the age group of highest susceptibility, and therefore in the greatest need of toxin-antitoxin.

In 1924 Dr. Giesen and myself gave it to our children. Early in 1925 I, as Health Officer, began to advocate strongly its use, and with the aid of the public health nurse, who urged its importance in the schools, and the endorsement of the State Board of Health, was able to induce twenty-five to take it.

In 1926, the superintendent of schools and the teachers became interested, and we got 122 to take the Schick test. These included teachers in all the grades and High School students, —persons from 40 years of age down. In this group we found sixty-one or exactly 50 per cent susceptible. This percentage would probably have been higher in small children. In 1927, 180 took it and, in the spring of 1928, 238 took it making a total of 580. This probably represents more than 90 per cent of all that have taken it in Radford. The number increases each year as parents come to know the importance of it.

We are urging all the younger school children to take it, and to bring their little brothers

*Read at the meeting of the Southwestern Virginia Medical Society in Wytheville, September 27-28, 1928.

and sisters for it, which many of them are beginning to do.

The clinics conducted by us in Radford and by the State in general have reached comparatively few children of pre-school age, as most of this work has been done in the schools. Our efforts must be concentrated more in immunizing the very young—from nine months to six years of age—as this is the group that most needs protection.

We have been able to get ninety-five of those who have taken toxin-antoxin back for the Schick test six months to two years after taking it, and have found only five who are not immune. We have not had a case of diphtheria in one who has taken the toxin-antitoxin, but we had a case in a young mother with a two year old child that had taken the toxin-antitoxin that did not contract it.

Whether diphtheria will ever cease to be a menace to childhood depends upon the readiness of the public, especially the parents of young children, to utilize the medical resources that are now available in the attack upon the disease. We have witnessed thirty-three years of progress in the fight against this grim enemy of little children. Medical science has discovered its cause, how it is transmitted, improved methods of diagnosis, a specific treatment, a test of susceptibility, and a sure and harmless method of prevention.

From the medical side, further improvements and refinements are to be expected, but with the practical knowledge already at our command, almost every case of diphtheria and every death therefrom is a direct challenge to our intelligence.

FIVE UNUSUAL CASES OF PERITONITIS.*

By THELMA F. BRUMFIELD, M. D., University, Va.
From Department of Pathology, University of Virginia.

Five recent cases of peritonitis are of interest because of their origins. They were well-distributed over the hospital services, one being medical, one surgical, one pediatric, and two urological. In no case was an antemortem diagnosis made which localized exactly the source of the peritonitis; and in three cases the existence of peritonitis was not diagnosed before autopsy.

The first was admitted on the Medical Service, and died a few hours later. A deep jaundice of three weeks' duration led to the suspicion of carcinoma at the head of the pancreas. At autopsy the peritoneal cavity was filled with thick greenish pus. The gall-bladder had completely sloughed away, and only a few fibrous remnants were left lying in a cavity of darker brownish pus and necrotic debris. The common duct was dilated to one centimeter in diameter, the wall was two millimeters thick, and it contained several faceted gall-stones. The liver was cirrhotic and showed multiple abscesses about the bile canals. The pancreas appeared normal on gross examination except for a slight fibrous thickening about the common duct. Microscopic study, however, showed small groups of cancer cells in the common duct and along the bile canals of the liver. The original growth may have occurred in the gall-bladder, and the peritonitis resulted from rupture here.

The second patient, a colored man, appeared to be improving for twelve days following a prostatectomy, when he suddenly complained of pain in the right upper quadrant. An exploratory laparotomy revealed an abdomen filled with pus and more concentrated about the lesser omentum, but no rupture in the stomach or appendix region was found. At the autopsy six days later, a cavity was felt opening at the bottom of the recto-vesical pouch. The prostatic bed appeared to be healing well, and it did not connect by any false channel with the cavity. Dissection of the region of the seminal vesicles showed the tubular tissue of the right one to be replaced by an abscess cavity, containing dark brown pus and debris, and opening into the peritoneal cavity. Also in the perineal region a thrombosed vessel was found and this was thought to be the source of pyemic infarcts in lung, spleen, kidney and intestine. Several facts make a diagnosis of the origin of the peritonitis in this case problematical. The first clinical symptoms occurred some time after the prostatic operation; they were of sudden onset and were located in the upper abdomen, suggesting a peritonitis of epigastric origin; it is possible that the rupture of the seminal vesical abscess into the peritoneum was an autopsy artefact, and was due to pressure exerted on a wall weakened by the abscess within. Widespread suppurative infarctions occurring in the spleen, the lung, and the lower loops of the ileum are possible sources of the peritonitis and would more readily fit the clinical pic-

*Read before the University of Virginia Medical Society.

ture of acute onset and the concentration of symptoms and pus in the upper abdomen. Nevertheless, the impression obtained by study of the autopsy was that peritonitis arose from rupture of the seminal vesical abscess.

The third case, an elderly colored woman, had suffered for several years from abdominal pain. Four days before death she was reported to have received a blow in the abdomen, but this she denied. She developed a sudden severe pain in the left lower quadrant and when admitted to the hospital her condition was too desperate to warrant operation. At autopsy the whole abdomen was found filled with a purulent exudate. A pyosalpinx on the left side, 5x3 cm. in size, showed a small rupture from which thick greenish pus was expressed. A few small cysts, 2x3 mm. in diameter, containing a clear fluid, were seen on the surface of this dilated tube, and the rupture occurred at the edge of one of these cysts. The right tube was congested, but showed no old adhesions and no evidence of a chronic pelvic inflammation.

Small cysts apparently similar to those found about the uterus and Fallopian tubes are described by Kaufmann as occurring in conditions of chronic salpingitis, and result from inflammatory hypertrophy of the glandular epithelium with its secondary cystic degeneration in the muscle wall. How much they contributed to the peritonitis, by causing a weakening of the tube wall, is a matter for conjecture.

Smears from the abdominal cavity and from the pyosalpinx appeared identical and were heavily loaded with a gram-positive diplococcus, apparently in pure form. Culture of the peritoneal pus showed the usual morphology and behavior of pneumococcus, and the organism was bile soluble. A broth culture from the pyosalpinx was taken later during the autopsy and handled by a student. It gave a heavy growth of bacillus coli, supposed to be a contamination.

The fourth case, an infant ten days old, died with signs of acute infection and increased intracranial pressure. The peritoneum was greatly congested and there was a thick yellowish mucoid exudate with occasional fibrinous clumps within the abdomen. The umbilicus appeared to be normally healed, but dissection of the right hypogastric artery revealed an unobliterated lumen filled with pus. The pelvic viscera were markedly congested. Smears showed streptococci, and the organisms could be seen lying in an abscess pocket in the microscopic tissues from the broad ligament. The meninges were also congested and showed streptococci in the exudate, while the skin was covered by a diffuse scarlatinal rash. No other focus for the infection was found except the umbilical vessels.

The last case, a white man, had suffered for years with kidney and ureteral stones. Six months before death the right kidney pelvis had been drained. At autopsy the peritoneal cavity contained quantities of thick pus more marked on the right side. The right kidney was smaller than the left, and it was adherent to the body wall and the colon. A peri-renal abscess, surrounded by a thick fibrous wall opened into the peritoneal cavity, and in this region there was thick inspissated pus. About an ounce of pus was drained from the kidney pelvis. The left kidney was also surrounded by abscess pockets, which were very thin-walled.

Kaufmann, in the last edition of his Special Pathological Anatomy, discusses the origin of peritonitis from various local suppurative processes. The origins of the four adult cases here reviewed are unusual, but not mentioned as being especially rare. The occurrence of a pneumococcus peritonitis originating in a Fallopian tube abscess in an elderly woman appears to be a distinct rarity, however, for over 75 per cent of pneumococcus peritonitis in a series of cases reported by Brunn (Da Costa's Modern Surgery) occurred in children, and it is especially apt to occur as a blood-borne infection secondary to a respiratory infection wth pneumococcus.

Fishbein reports twenty cases of peritonitis associated with salpingitis occurring in 184 postmortems on pertonitis, but the causative organisms are not individually reported and no case similar to the present was found discussed in the available literature.

Suppurative processes in the umbilical arteries resulting in peritonitis and generalized infection are discussed by Holt in his text-book on pediatrics, and they likewise are frequent enough to be considered as hazards in the first week of life.

In conclusion, five cases of peritonitis are presented, one originating through the rupture of a localized abscess in the gall-bladder region and associated with cancerous change, one from a pyosalpinx, one from the peri-renal tissues, and one of a questionable origin, probably from rupture of a seminal vesical abscess. The fifth case arose by extension from infection of the umbilical vessels. It is curious to note that contrary to our usual percentages, not one case of rupture of the gastro-intestinal tract has occurred in our series of autopsies this winter, and the only other case of general peritonitis resulted from an infected gunshot wound.

Rfference

Fishbein, Morris: A Contribution to the Bacteriology of Peritonitis, with Special Reference to Primary Peritonitis. *Am. J. Med. Sc.*, Vol. 144, p. 502. 1912.

PREGNANCY WITH COMPLICATIONS—CASE REPORTS—TUBERCULOSIS.

By
ALFRED N. BESSESEN, Jr., M. D.,
and
DANIEL H. BESSESEN, M. D.,
Minneapolis, Minn.

Case 1. Mrs. F. N. L., seen first during June, 1923, at the age of 21, single, attending school. Had just had removed from under the left axilla lymph nodes which had been diagnosed tubercular microscopically. There was a clinical picture of active tuberculosis, with fever, anemia, loss of appetite and loss of weight. During the next year she received regular treatments from the mercury quartz lamp as an adjunct to sunlight, and in early August, 1924, a further diagnosis of intestinal tuberculosis was made following six or seven weeks of indigestion with febrile signs of active infection. She was placed in Glen Lake Sanatorium where, during a stay of three years, operation was performed to relieve symptoms of acute appendicitis, confirming the intestinal lesion—ileo-cecal. She was discharged from the sanatorium with arrested glandular tuberculosis and quiescent intestinal tuberculosis in January, 1927. In May of that year, she married and dated her first pregnancy from June 1, 1927. She was delivered from O. L. A. position at term, with second degree laceration. The placenta was delayed two and a half hours and was hastened by injection of 300 c.c. normal saline into the umbilical vein. One month following labor, the red count was 3,680,000, and haemoglobin 78 per cent. She was placed on high iron diet and rest, and convalesced satisfactorily with no indication of activation of either tuberculous lesion.

Case 2. Mrs. H. S., married, age 39, gravida 8, para 5, entered the clinic at nearly term with a past history of varicella, arthritis, pertussis, mumps. There was no abnormality noted in the family histories—marital, social, occupational or menstrual. She had had five children out of seven pregnancies, the third and sixth miscarrying at two and three months, respectively. Physical examination showed a badly infected mouth and a cystic goitre. At delivery there was an occipito-posterior presentation arrested in transverse. Version was performed and convalescence progressed with apparent normality. Nine months after delivery, the patient had fever, with cough, loss of appetite, loss of weight, severely infected teeth. Two sputa were examined and found negative for tubercle bacilli. The teeth were carefully extracted and the weight changed from 94 to 104 pounds in three months. In another thirty days, however, this weight was reduced to 100 pounds. At this time, fifteen months following labor, the patient developed erysipelas of the face, and from then on became rapidly worse, dying from far advanced pulmonary tuberculosis.

It is generally recognized that tuberculosis in other parts of the body is much less activated by pregnancy than is pulmonary tuberculosis. The time of greatest reaction is during the first trimester and during the months immediately following expulsion of the birth products.

In the first three months of pregnancy there is a slight weight loss (4 to 5 pounds) which is usually made up by the end of the third or fourth month. A rearrangement of the endocrine balance of the mother's body has become necessary and this reduces the nutrition of the patient slightly. Many patients develop vomiting, but all patients suffer a greater or less loss of weight. Loss of weight is the most commonly activating symptom of tuberculosis and is probably responsible for making the first trimester such a bugaboo for the tuberculous mother.

After this period, however, the mother customarily picks up in weight. There is an ability to utilize all food substance to its fullest

benefit. Unless the tuberculous lesion becomes active during the first three months, it is not likely to become so during the second or third trimesters.

An additional factor which brings this about is the anatomic change of the thorax during the last six months of pregnancy. The change is that of making the thorax more squat and broad, with shortening of the vertical measurement, and there is increase of the sagittal and horizontal measurements of the thoracic cavity. There is increase of the subcostal angle, and of the costo-vertebral angles, the ribs being lifted laterally, increasing the circumference of the chest and decreasing its expansion and excursion.

Immediately following labor, this anatomic change is completely rearranged, with a return of the lung shape to that preceding pregnancy. A transformation which has taken six to nine months to accomplish is reformed in four or five weeks. The effect is like suddenly removing a pneumothorax. Naturally, tuberculous lesions which exist in the lines of stress or pulling during this violent shaping of the lung tissue will be reopened, scar tissue is broken down, and activation results following labor. Some lesions, which may be active, may lie in situations of the thoracic cavity which allow the tissue to be put at rest by the change; while other cases present the opposite. The former are improved during gestation, while the latter are made worse. In both types of the condition, the violence of delivery may activate tuberculosis during the puerperium.

Further Zhurakovski has demonstrated by vital capacity experiments that the capacity of the lungs is increased 150 c.c. average by the ninth to twelfth day post-partum in 66.6 per cent of the cases. Recent studies on vital capacity in pregnancy show little or no changes during pregnancy, although change of this amount during parturition and early puerperium is sufficient to make extremely dangerous even a healed tuberculous lesion, let alone an active one.

5 *West Lake Street.*

Proceedings of Societies

The Post-Graduate Medical Society of Southern Virginia

Held its annual meeting at Waverly, Va., February the 12th, this being a most delightful and interesting occasion. There was a symposium on Influenza on which subject papers were read by Drs. J. Bolling Jones, W. A. Reese and Philip Jacbson, of Petersburg. This subject was freely discussed. The scientific meeting adjourned at six P. M. for supper, following which the nominating committee presented its report through its chairman, Dr. Wright Clarkson, of Petersburg. The following are the officers elected for the ensuing year: President, Dr. M. H. Tredway, Emporia; vice-presidents, Drs. F. N. Mallory, Lawrenceville, and W. W. Seward, Surry; secretary-treasurer, Dr. Philip Jacobson, Petersburg; chairman of Steering Committee, Dr. W. A. Reese, Petersburg. The Board of Censors is composed of Drs. T. F. Jarratt, Jarratt, H. G. Stoneham, Waverly, and Joel Crawford, Yale. The members of the Board of Public Health and Legislation are: Drs. J. Bolling Jones, Petersburg, W. M. Phipps, Hopewell, and L. O. Vaughan, Waverly.

The next meeting of this Society will be held at Emporia.

The Roanoke Academy of Medicine

Held a dinner meeting at the Elks Club, in Roanoke, Va., February the 18th. Following the dinner, a paper was presented by Dr. Thomas P. Sprunt, Associate in Clinical Medicine at Johns Hopkins University, his subject being "Classical Endocrine Syndromes with Remarks on Glandular Diagnosis and Organo-Therapy". This was illustrated with lantern slides.

The Danville Academy of Medicine,

At its regular meeting held in the dining room of Burton Hotel, that city, February the 12th, elected Dr. C. P. Howze, president; Dr. L. O. Crumpler vice-president; and Dr. J. J. Neal, secretary. Dr. I. C. Harrison and Dr. J. A. Hawkins are retiring president and secretary, respectively.

The University of Virginia Medical Society

Held its regular meeting on February 4, 1929, at 7:30, in the University of Virginia Hospital dining room. The meeting was called to order by Dr. Speidel.

Dr. Hopkins presented the first clinical case of Encephalitis in a young boy. Dr. Fletcher Woodward presented a case of Bronchiectasis which had been treated by tracheotomy with remarkable improvement. Dr. J. B. Graham reviewed two autopsy cases with demonstra-

tion of autopsy material from a case of Syphilitic Aortitis and from a case of Syphilitic Aneurysm of the ascending Aorta. The latter case was accompanied by an unusual lung finding in which the differential diagnosis of a widespread tuberculosis and fibrosis, and syphilitic fibrosis were discussed. Dr. W. W. Waddell, of the Pediatric Department, presented the main paper of the evening, "Feeding of Prematures", illustrated with slides. This paper has been published elsewhere.

The next regular meeting will be held February 18th, at 7:30 P. M.

At the meeting of this Society on February 18th, at the University Hospital, Dr. J. B. Graham demonstrated the pathological material from a case of pulmonary tuberculosis in which there was a complication of otitis media with mastoiditis.

Dr. E. C. Moore presented a case of lung suppuration following a tonsillectomy under general anaesthesia. Dr. Peterson exhibited a series of X-rays on the case. Dr. Graham showed the autopsy material from the case, particularly interesting tissue being the lung, showing the multiple abscesses.

Dr. W. H. Goodwin gave the main paper of the evening, *Bone Tumors*. He showed pictures of the cases, slides of the X-ray and the gross tissues of his series. Several interesting osteogenic sarcomas were exhibited, two of which have been entered in the Registry. (This paper will be published at an early date.)

Dr. C. B. Morton exhibited a patient with a rapidly growing osteogenic sarcoma of the upper end of the humerus. Dr. Peterson explained the X-ray findings in this case.

The next regular meeting will be held March 4th, at 7:30 P. M. All members of the Medical Society of Virginia are cordially invited to attend.

Woman's Auxiliary, Medical Society of Virginia

The Auxiliary's Task in Health Education.

The first request of the American Medical Association to the Woman's Auxiliary was that call to arms in educating the public in preventive medicine. To be able to do this work effectively the doctor's wives must first be educated themselves. Through living so close to the profession (wives naturally absorb knowledge from their husbands), they know the value of bodily health and proper living. It is easy for them to teach by their own example that wholesome living and frequent consultations with the family doctor will go much further toward maintaining good health then the treatment of disease.

The American Medical Association has also asked the Auxiliary to sponsor child health. What better work than this for the Woman's Auxiliary? Dr. Charles Mayo has said, "educate a child in health and you educate a whole family."

Health is now commonly listed as the first of the objectives of general education. Today the modern schools have health programs which are not limited to disease prevention, but to increase human happiness as well. This program aims at the attainment of health itself, not health knowledge merely. Leadership, active, informed, deliberate, should come from the doctor. The teacher and the public health nurse are the health teachers in the schools, the teacher as the regular health instructor and the nurse as the health advisor and assistant. The teacher must be a leader in school health, and must be equipped with knowledge and the art of healthful living herself. So health workers are concentrating on *teachers' training schools*, insisting that *allies not enemies* in the health crusade be graduated as teachers. The Auxiliary can be of great assistance in this work.

Even in schools where these programs are being carried on, the doctor's wives, as members of the Parent-Teacher's Association, can urge mothers to have children examined and all defects corrected before school begins.

National Chairman of Health Education for the Auxiliary, Mrs. George Hoxie, of Kansas City, asks that "the State and County Auxiliaries will keep in mind:

First—That personal hygiene, that is the principles upon which wise living must be based to make possible normal physical development and normal health, is necessarily dependent upon public hygiene.

Second—That since individuals and non-official organizations like ours cannot control public hygiene, every community must have official scientific health departments.

Third—That our first and most important

work is to secure such health departments, where they do not already exist; and

Fourth—Where they do exist that our most effective work can be done in co-operating with such official health departments to the end that they be made so effective as to be of the greatest possible good to the people they are maintained to serve."

Everything we do, therefore, from conducting baby clinics to showing health movies should be simply details of the One Main Task.

Alice Leigh,
(Mrs. Southgate Leigh),
State Chairman of Health Education.

Auxiliary to the Norfolk County Medical Society

The executive board of this auxiliary had a tea on February the 9th at the home of its president, Mrs. M. N. King. The attendance was excellent and so enjoyable that it is thought this proves that more social life would help in attendance and interest of the various auxiliaries.

The Truth About Medicine

In addition to the articles enumerated in our letter of December 29th, the following have been accepted:

Ciba Company, Inc.
- Lipoiodine—Ciba, Diagnostic.
- Ampules Lipoiodine—Ciba, Diagnostic, 5 c.c.

H. K. Mulford Co.
- Acidophilus Bacillus Liquid—Mulford.

E. R. Squibb & Sons
- Dandelion Pollen Allergen Solution—Squibb; English.
- Plantain Pollen Allergen Solution—Squibb; Goldenrod.
- Pollen Allergen Solution—Squibb; Perennial Rye Grass.
- Pollen Allergen Solution—Squibb; Ragweed (Dwarf).
- Pollen Allergen Solution—Squibb; Ragweed (Giant).
- Pollen Allergen Solution—Squibb; Red Top Pollen.
- Allergen Solution—Squibb; Russian Thistle Pollen.
- Allergen Solution—Squibb; Sunflower Pollen Allergen.
- Solution—Squibb; Bermuda Grass Pollen Allergen Solution—Squibb, 5 c.c.; June Grass Pollen Allergen Solution—Squibb, 5 c.c.; Mugwort Pollen Allergen Solution—Squibb, 5 c.c.; Orchard Grass Pollen Allergen Solution—Squibb, 5 c c.; Sagebrush Pollen Allergen Solution—Squibb, 5 c.c.; Western Ragweed Pollen Allergen Solution—Squibb, 5 c.c.

NEW AND NON-OFFICIAL REMEDIES

Normal Horse Serum.—A normal horse serum (New and Non-official Remedies, 1928, p. 348), marketed in packages of one syringe containing 10 c.c.; in packages of two syringes each containing 10 c.c.; in packages of one vial containing 25 c.c.; in packages of one double ended vial containing 50 c.c.; also in packages of one double ended vial containing 100 c.c. (The National Drug Co, Philadelphia).

Diphtheria Antitoxin, Extra Concentrated.—A diphtheria antitoxin, concentrated (New and Non-official Remedies, 1928, p. 352), prepared by inoculating horses with diphtheria toxin. It is marketed in single vial packages of 1,000 and 20,000 units; in syringes containing, respectively, 1,000, 3,000, 5,000, 10,000 and 20,000 units. (The National Drug Co., Philadelphia).

Tetanus Antitoxin.—A tetanus antitoxin, concentrated (New and Non-official Remedies, 1928, p. 356), prepared by inoculating horses with tetanus toxin. It is marketed in packages of one vial containing 1,500 units; in packages of one syringe containing 1,500 units; also in packages of one syringe containing 5,000 units. (The National Drug Co., Philadelphia).

Antistreptococcic Serum.—A polyvalent antistreptococcus serum (New and Non-official Remedies, 1928, p. 361), obtained by immunizing horses with streptococci from various clinical sources. It is marketed in packages of one syringe containing 20 c.c. and in packages of one double ended vial containing 50 c.c. (The National Drug Co., Philadelphia).

Vaccine Virus.—A vaccine virus (New and Non-official Remedies, 1928, p. 362), marketed in packages containing, respectively, one, five and ten capillary tubes. (The National Drug Co., Philadelphia).

Rabies Vaccine—Human (Semple Method).—An antirabic vaccine (New and Non-official Remedies, 1928, p. 363), prepared according to the general method of David Semple (phenol killed). Marketed in sets of two packages, the first containing four 2 c.c. vials and the second containing ten 2 c c. vials. (The National Drug Co., Philadelphia).

Pertussis Vaccine.—A pertussis bacillus vaccine (New and Non-official Remedies, 1928, p. 376), marketed in packages of one 5 c.c. vial containing 4,000 million killed pertussis bacilli per c.c.; in packages of one 15 c.c. vial containing 4,000 million killed pertussis bacilli per c.c.; in packages of one 30 c.c. vial containing 4,000 million killed pertussis bacilli per c c. (The National Drug Co., Philadelphia).

Pneumococcus Vaccine.—A pneumococcus vaccine (New and Non-official Remedies, 1928, p. 379), marketed in packages of one 5 c.c. vial containing 5,000 million killed pneumococci per c.c.; in packages of one 15 c.c. vial containing 5,000 million killed pneumococci per c c.; in packages of one 30 c.c. vial containing 5,000 million killed pneumococci per c.c. (The National Drug Co., Philadelphia).

Staphylococcus Vaccine.—A staphylococcus vaccine (New and Non-official Remedies, 1928, p. 391), marketed in packages of one 5 c.c. vial containing 2,000 million killed bacilli per c.c.; in packages of one 15 c.c. vial containing 2,000 million killed bacilli per c.c.; in packages of one 30 c.c. vial containing 2,000 million killed bacilli per c.c. (The National Drug Co., Philadelphia).

Typhoid Vaccine.—A typhoid vaccine (New and Non-official Remedies, 1928, p. 383), marketed in packages of one 5 c.c. vial containing 1,500 million killed typhoid bacilli per c.c.; in packages of one 15 c.c. vial containing 1,500 million killed typhoid bacilli per c.c.; in packages of one 30 c.c. vial containing 1,500 million killed typhoid bacilli per c.c. (The National Drug Co., Philadelphia).

Typhoid-Paratyphoid Combined Vaccine.—A typhoid vaccine (New and Non-official Remedies, 1928, p. 383), marketed in packages of three 1 c c. vials, the first dose containing 500 million killed typhoid bacilli, 375 million killed paratyphoid A bacilli and 375 million killed paratyphoid B bacilli, the second and third doses each containing 1,000 million killed typhoid bacilli, 750 million killed paratyphoid A bacilli and 750 million killed paratyphoid B bacilli; in packages of one 5 c.c. vial containing 1,000 million killed typhoid bacilli, 750 million killed paratyphoid A bacilli and 750 million killed paratyphoid B bacilli per c.c.; in packages of one 15 c.c. vial containing 1,000 million killed typhoid bacilli, 750 million killed paratyphoid A bacilli and 750 million killed paratyphoid B bacilli per c.c.; in packages of one 30 c.c. vial containing 1,000 million killed typhoid bacilli, 750 million killed paratyphoid A bacilli and 750 million killed paratyphoid B bacalli per c.c.; in packages of ninety 1 c c. vials (thirty immunizations), being thirty sets of three doses, the first dose containing 500 million killed typhoid bacilli and 375 million each of killed paratyphoid A and B bacilli, the second and third doses containing, respectively, twice the number of bacilli in the first dose. (The National Drug Co, Philadelphia).

Typhoid-Paratyphoid A Vaccine.—A typhoid vaccine (New and Non-official Remedies, 1928, p. 383), marketed in packages of one 5 c.c. vial containing 750 million killed typhoid bacilli and 250 million killed paratyphoid A bacilli per c.c.; in packages of one 15 c.c. vial containing 750 million killed typhoid bacilli and 250 million killed paratyphoid A bacilli per c.c.; in packages of one 30 c.c. vial containing 750 million killed typhoid bacilli and 250 million killed paratyphoid A bacilli per c.c. (The National Drug Co., Philadelphia).

Scarlet Fever Streptococcus Toxin for Preventive Immunization—P. D. & Co.—It is prepared by the method of Drs. Dick, by license of the Scarlet Fever Committee, Inc. (New and Non-official Remedies, 1928, p. 392). Marketed in packages of five vials of toxin, containing, respectively, 500, 2,000, 8,000, 25,000 and 80,000 skin test doses; in packages of fifty vials of toxin, ten containing 500 skin test doses, ten containing 2,000 skin test doses, ten containing 8,000 skin test doses, ten containing 25,000 skin test doses, and ten containing 80,000 skin test doses. Parke, Davis & Co., Detroit. (Jour. A. M. A., January 5, 1929, p. 55).

Bothrops Antitoxin.—An antitoxic serum prepared by immunizing animals against the venom of the tropical American serpents of the genus *Bothrops*. Evidence has accumulated to show that the venom of certain snakes may be neutralized by the employment of a serum obtained from animals that have been injected with venom from a snake of the same family. Bothrops antitoxin is used to neutralize the venom injected by the bite inflicted by members of the genus *Bothrops*. The serum is administered intramuscularly or subcutaneously; in cases seen late or in the presence of severe symptoms it may be administered intravenously.

Antivenin (Bothropic).—Tropical American Anti-Snake-Bite Serum.—An antitoxic serum prepared by injecting horses with venom from serpents of the genus *Bothrops*, especially of the "Fer-de-Lance" (*Bothrops atrox*). It is claimed to have neturalizing effect against the venom of the genus represented. The serum is marketed in syringes of 10 c.c. (a single dose). H. K. Mulford Co., Philadelphia.

Ephedrine Hydrochloride—Lilly.—A brand of ephedrine hydrochloride.—N. N. R. (New and Non-official Remedies, 1928, p. 175). It is also supplied in the form of Pulvules Ephedrine Hydrochloride—Lilly, ⅜ grain, Pulvules Ephedrine Hydrochloride—Lilly, ¾ grain and Solution Ephedrine Hydrochloride—Lilly, 3%. Eli Lilly & Co., Indianapolis.

Tablets Ephedrine Hydrochloride—Squibb, ⅜ grain.—Each tablet contains ephedrine hydrochloride—Squibb (*The Journal*, September 1, 1928, p. 645), ⅜ grain. E. R. Squibb & Sons, New York.

Book Announcements

Vocabulary of the Kiowa Language. By JOHN P. HARRINGTON. United States Government Printing Office, Washington. 1928. Smithsonian Institution, Bureau of American Ethnology, Bulletin 84. Octavo of 255 pages. Cloth.

Textbook of Clinical Neurology, for Students and Practitioners. By M. NEUSTAEDTER, M. D., Ph. D., Visiting Neurologist, Central Neurological Hospital, Welfare Island; Clinical Professor in Neurology, New York Polyclinic Medical School and Hospital, etc. With an **Introduction** by EDWARD D. FISHER, M. D., Professor Emeritus of Neurology, University and Bellevue Hospital Medical College, New York. Philadelphia. F. A. Davis Company, Publishers. 1929. Octavo of 602 pages with 228 illustrations, some in colors. Cloth. Price, $6.00 net.

Spinal Anesthesia (Subarachnoid Radicular Conduction Block) **Principles and Technique.** By CHARLES H. EVANS, M. D., Clinical Assistant, N. Y. Post-Graduate Medical School and Hospital, Lying-In Hospital of the City of New York, etc. **Introduction** by W. WAYNE BABCOCK, M. D., F. A. C. S. **Foreword** by CHARLES GORDON HEYD, M. D., F. A. C. S. Octavo of 203 pages with 41 illustrations, 3 in color and 1 folding colored plate. Paul B. Hoeber, Inc. New York. 1929. Cloth. Price, $5.50 net.

Angina Pectoris. By HARLOW BROOKS, M. D., Emeritus Professor of Clinical Medicine, New York University; Visiting Physician, City Hospital, etc. **Harper's Medical Monographs.** Harper & Brothers. New York and London. 1929. 12mo. of 164 pages. Leatherette. Price, $2.50.

The National Health Series. Diabetes and Its Treatment. By FREDERICK M. ALLEN, M. D., Director of the Physiatric Institute, Morristown, N. J. **What Every One Should Know About Eyes.** By F. PARK LEWIS, M. D., F. A. C. S., Vice-President, National Society for the Prevention of Blindness. **Care of the Mouth and Teeth.** By HARVEY J. BURKHART, D. D. S., LL. D., Director, Rochester Dental Dispensary, Rochester, N. Y. Edited by THE NATIONAL HEALTH COUNCIL. Funk and Wagnalls. New York and London. 1928. Leatherette. Pocket size. Price, 30 cents each.

Certified Milk Conferences held in 1928. Annual Conference **American Association of Medical Milk Commissions, Inc.,** and **Certified Milk Producers' Association of America, Inc.,** Minneapolis, Minn., June 11-12, 1928. Annual Conference **Metropolitan Certified Milk Producers, Inc.,** with the **Certified Milk Producers' Association of America, Inc.,** New York, N. Y., February 6, 1928, etc.

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Editorial

Carcinoma of the Pancreas.

Based upon a study of 37 cases and presenting observations from a reference literature of wide range, a paper of Friedenwald and Cullen* is taken as a convenient source for editorial comment here. Perusal of the paper gives one an opportunity for refreshing one's mind on the subject.

The symptomatology may be quite indefinite in the early stages of the disease. There may be only mild digestive discomfort, such as one may hear from any "dyspeptic", eructations, nausea, and loss of appetite. Later, as the disease progresses, pain, malaise, vomiting, and gradually deepening jaundice, loss of flesh, and cachexia appear. Fever eventually appears. Patients in the fifth decade, presenting such symptoms, may be strongly suspected of having malignant disease of the pancreas.

Digestive disturbance such as pain, described as a feeling of fullness and pressure, becoming more and more intense, possibly colicky in type, mark the appearance of grave involvement of the pancreas. Eusterman observed that 88 per cent of cases complain of pain. Nausea and vomiting were found in 33 out of 37 of the author's cases, while pain occurred in 31 out of 37 cases. Tenderness on pressure in the epigastrium and at times under the right costal border is frequent. Jaundice due to obstruction of the common duct was found in 26 out of the 37 cases. Absence of free hydrochloric acid was noted as common. Diarrhea and constipation, alternating, are commonly present. Fat and undigested muscle fiber in stools of a bulky nature were found.

Tumor mass and enlargement of the gall-bladder are outstanding and important signs. In this connection, enlargement of the liver is found; at least 40 per cent of cases show this association. The gall-bladder is distended; when demonstrable, it is a real diagnostic sign. In Futcher's report 70 per cent showed the gall-bladder distention. The authors point out the observation that in Ecklin's report of 172 cases of obstruction of the common duct due to gall-stones, the gall-bladder was contracted in 70 per cent, while in 61 cases of carcinoma of the pancreas, gall-bladder was dilated in 96 per cent. Tumor mass, according to Futcher's and Kiefer's figures, may be palpated in 39 per cent to 30 per cent of cases, while the authors' figures give 43 per cent, they having been able to make out tumor mass in 16 cases.

Outstanding symptoms arising from involvement of the pancreas, but shown through pressure effects and causes are worthy of comment. Cancer of the pancreas rarely causes diabetes, but transient glycosuria, sometimes permanent, is found in these cases. About 10 per cent show transient glycosuria. The authors' cases showed transient glycosuria in 6 per cent. Bile is present in urine in all jaundiced cases. Ascites and edema of the extremities are found in later stages of the disease and when the pressure is made upon the portal vein, vena cava, or by secondary involvement of the liver, adjacent.

Obstructive symptoms occur. Pressure upon the pylorus or duodenum may produce ugly gastric symptoms; obstruction of the intestines and enlargement of the spleen may throw in a complicating group of symptoms in some cases. In the matter of diagnosis, the authors of the paper, under comment, take the reasonable position that diagnosis of cancer of the pancreas "can be made with ease in about one-half of the cases; 'other cases may be' extremely difficult." It is easy to make the diagnosis in patients who give a history of indigestion, increasing pain in the upper abdomen, deep jaundice, rapid emaciation, and cachexia. But in the incipient stages with an absence of several of the symptoms, as may occur, the accuracy of the diagnosis is more uncertain. Physicians must be on the alert for that case of cancer of the pancreas that presents symptoms of digestive disturbance of the stomach associated with recurrence of persistent diarrhea. In the patient past middle life who

*The American Journal of the Medical Sciences, July, 1928.

shows gastric disturbance, pain in the epigastrium, fatty diarrhea, with a marked anemia, one may think strongly of cancer of the pancrease, as one endeavors to arrive at a differential diagnosis. Because, among a group of conditions, such as chronic pancreatic cholelithiasis, or cholecystitis, cancer of the liver or gall-bladder, one has to make a careful differentiaton in an assembly of symptoms much alike.

Primary Carcinoma of the Lung.

In touching upon this subject, the idea that it is a rare condition must be given up. Carcinoma is on the increase in America and abroad, and primary carcinoma of the lung is found at autopsy once in every 200 deaths from carcinoma, and is found once in every 200 autopsies upon adults. So it is not improbable that the idea of the rarity of the disease has been estimated by the failure in recognizing it in pulmonary cases in the fifth, sixth, and seventh decades of life.

It is probably wise for our readers to consider anew, if only in such a sketchy manner, certain leading or cardinal symptoms and signs. The list of symptoms of the disease may be wanting in any real individuality. There may be cough, pain in the chest, a certain sort of sputum, dyspnea, cyanosis, dysphagia, stertor, and effusion. In case of carcinoma of the mediastinum, there may be cough, pain in the chest, dyspnea, cyanosis, venous engorgement and edema of the upper part of the body, paralysis of the recurrent laryngeal nerve, hoarseness, inequality of the pupils, abdominal pain, dysphagia, and stertor. Certain general systemic signs are associated with this such as loss of weight, weakness, osteoarthropathy, fever, chills, and anorexia. Further, association of symptoms due to metastasis may be noted as found in evidence of the involvement of the central nervous system, pain in the lower extremities, pain in the back, and abdominal pain. The findings of physical examination necessarily vary over a wide range. The stage and state of progress and complicating factors bring a varied assortment of signs by inspection, palpation, percussion and auscultation. The area of dullness, increasing progressively, marks the neoplastic mass in the more advanced cases. Naturally, lung parenchyma may emit signs that vary.

Weller's twelve cases form an interesting story in the description of primary carcinoma of the lung and can be read by practitioners with profit. Case one, presenting symptoms of coma, cyanosis and dyspnea, gave a pathologic diagnosis of stenosis, primary adeno-carcinoma of the right main bronchus, metastasis in bronchial lymph nodes and left kidney, acute stenosis of the trachea, partial stricture of the esophagus, chronic purulent fibroid pneumonia, bronchiectasis, emphysema, chronic leptomeningitis, atrophy with acute and chronic passive congestion of all organs. Case two displayed abdominal pain and much difficulty was experienced in arriving at a correct diagnosis. X-ray of the chest disclosed increased density of the hilum and other foci. Case three displayed vomiting, abdominal pain, and loss of weight. In case four pain in the legs dominated the picture. In case five, engorgement of the superficial veins and hoarseness were the most striking signs. Case six showed mainly enlarged cervical nodes and weakness. Case seven complained of pain in the arms and chest, hoarseness, and showed pupillary inequality. Case eight gave a history of pain in the back and showed paralysis of the lower extremities. Case nine complained of pain in the feet and legs and was confused with aortic aneurism. Case ten gave out the following chief signs—cough, hemoptysis, dyspnea, fever and empyema. Case eleven complained of pain in the chest, productive cough, and weakness. Case twelve gave a clinical history chiefly of pain in legs. A rich array of symptoms and signs may be found as one peruses the interesting case reports, autopsy reports, and the records of the pathological diagnosis. To follow carefully this excellent presentation of the subject is to renew one's knowledge of the physical findings of these cases. Weller's paper should be read with interest.

Reference: Annals of Internal Medicine, February, 1929.

Tumors and Inflammations of the Mediastinum.

An anatomical description, even in brief, is quite necessary in this comment. This space, between the approximate reflections of the pleurae in the median line, contains three general compartments. In the anterior mediastinum, there were found loose areolar tissues, lymphatic vessels, the remains of the thymus gland, the internal mammary vessels of the left side, and the origin of sternohyoid, sternothyroid, and the triangularis muscles. The middle mediastinum holds within its confines

the heart in its pericardium, the ascending aorta, the super vena cava, the bifurcation of the trachea, the pulmonary arteries and veins, and the phrenic nerve. The posterior, lying between the posterior part of the pericardium and the vertebral line, holds the descending aorta, the greater and less azygos veins, the esophagus, the pneumogastric nerves and the great splanchnic nerves.

This middle septum between the two lungs, within the thorax, as one may easily conceive, may cover the site of serious inflammatory and chronic pathology. The proximity of this closed space to the great arterial and venous vessels of the body, the close contact of this compartment with its lymphatic and nerve lines, with the inflammation of the heart and pericardium, the ultimate relation of the visceral stock of the mediastinal chamber with the inflammation of the larynx, trachea and bronchi, the rich and abundant converging of the lymphatic system, with its frequent inflammatory and pathologic enlargements, all make for the easy possibility of the occurrence of acute inflammatory phenomena and, also, with tuberculosis, syphilis, and cancer, as a triumvirate of not infrequent focal occurrence within this general area of the body, of chronic pathologic growths.

Inflammatory changes of the mediastinum are roughly found to fall under the general terms of lymphadenitis, acute mediastinitis and chronic mediastinitis, while tumor growths of the mediastinum are sarcoma and lymphosarcoma, carcinoma, endothelioma, thyroid tumors, enlarged lymph nodes and cysts.

With these general facts in mind, practitioners, who are daily in touch with patients past middle life suffering with diseases affecting the organs of respiration and the heart, and who have primary evidence of syphilis and tuberculosis, may recall some of the symptoms and physical signs emanating from pressure signs of the mediastinum.

Fortunately or unfortunately, according to the view one takes, the mediastinum may be the site of inflammation and chronic growth of no small degree and yet "kick-up" no serious or distressing symptoms or signs. It may be easily understood that infected lymph nodes and other inflammatory processes may follow acute infections of the pleura, lungs, pericaridum, trachea, and other organs adjacent, and yet not bring the patient to the physician.

It is usually after growth and pressure symptoms exhibit distressing proportions of dyspnea, cough, pain and circulatory disturbances that mediastinal disorders are presented by patients for diagnosis. As these symptoms are present in other very important disease-conditions within the chest, it becomes a matter of importance to interpret them.

Dyspnea, with constriction and oppression in the chest, cough, paroxymsmal in character accompanied by stridor, pain within the chest, associated with respiratory disturbances like laryngeal paralysis or asthma phenomena, circulatory disturbance of heart as bradycardia or tachycardia, disturbance of diaphragm and other assortment of symptoms, directs one's mind to the pressure effects of a tumor of the viscera of the mediastinal space within the anterior, middle or posterior division or a combination of all.

Physical signs here are signs of late changes. Bulging of the chest, fullness of intercostal spaces, displacement forward of the sternum, enlargement of the lymphatics of the neck, signs of difficult breathing, pulsations and distended vessels may be gotten on inspection. Percussion over the chest with aggravated signs as mentioned above gives dullness or flatness over the growth within.

Signs of venous congestion and edema stand out as evidences of pressure. Until the collateral circulation becomes established, these signs may be extremely annoying. In this as in all chest pathology, X-ray examinations materially aid the examiner. While it is relatively easy to determine the pressure of a mass in the mediastinum, it is not at all easy to determine the nature of the tumor. In addition it is not easy to differentiate between tumors of the anterior and posterior mediastinum.

Reference: Oxford Medicine II, Chapter VI.

Chronic Mediastinitis.

This condition is often overlooked. There may be a group of inflammatory processes of varying origin in the structure of the mediastinum. The fact remains that no matter what the etiologic nature of the process is, the thickening and increase of connective tissues occurs and when these processes reach proportions sufficient to produce pressure effects, symptoms present themselves—at first not very characteristic but later pointing more directly to the mediastinum. There are three general causes: (1) Syphilis that may symptomatically be mild in the earlier stage; (2) tuberculosis, that is usually of the lymph nodes, sometimes bone

structure; and (3) other infections associated with infections of the nose, throat, lungs, and pericardium.

Symptoms of the condition depend upon the nature, location and degree of the inflammatory processes. Obstructive symptoms of venous circulation present signs of importance in mediastinitis. Dyspnea on effort and venous obstruction signs make one thing of the mediastinum. Following or associated with these are cyanosis and oppression. Later, cyanosis becomes fixed and emphatic and edema occurs The gross changes of the upper chest and face later present bloated and swollen features of a bluish red color. Eyes take on prominence. The venous tortuosity and dilatation become extremely exaggerated.

The physical signs vary and the diagnosis will rest upon the history, symptoms, physical findings, laboratory examinations and X-ray study.

Council Approves Sheppard-Towner Act.

The Council of the Medical Society of Virginia at its meeting on February 26, 1929, approved a continuance of the Sheppard-Towner Act.

Virtually half of Virginia's counties now have nursing services that are being aided by contributions from the joint maternity and infancy fund to which the State and the Federal Government are equal contributors. The Federal Government really gives more money since it appropriates to each State $5,000 of unmatched funds which is supposed to be sufficient for all overhead expenses of administering this fund.

In Virginia, no Sheppard-Towner program has been inaugurated until it had been approved by the authorized representatives of the Medical Society of Virginia; and there has been no variation from any program without the consent and approval of such representatives. Therefore, it was to have been anticipated that the Council of the Society would view, without sympathy, efforts which are being made to have it appear that the Sheppard-Towner work is disapproved by the medical profession generally.

Nevertheless, it is peculiarly gratifying to the public health authorities of the State that the Council showed the wisdom and farsightedness to place itself on record as approving the activities conducted under the Sheppard-Towner Act and, by inference, supporting those who are now asking that this Act be continued. And it will be peculiarly gratifying to the poor mothers in far remote rural sections who will understand from such action that the great medical profession sympathizes with them and wishes to do all in its power to make their troubles lighter and their dangers less.

Intelligent selfishness, to put the matter on no higher ground, should incline doctors to favor this measure. Among the outstanding accomplishments of the Sheppard-Towner work in Virginia has been the material reduction in the number of ignorant midwives and the considerable instruction of the better ones to recognize before it is too late cases which require medical attention. Unfortunately, the distribution of doctors in our rural sections makes it extremely difficult for rural mothers to obtain medical care at the time of childbirth; but by the training of the more intelligent midwives and the holding of institutes for doctors' helpers together with the printed lessons to mothers and prospective mothers—all efforts made possible by Sheppard-Towner aid—the pathologic cases will be more sure of attention even if the physiologic cases cannot secure medical care.

In this respect, Virginia has no greater difficulties than have other States. The scarcity of doctors in rural sections is a national problem. It is, indeed, a pity that city physicians in certain sections of the country uninformed as to the problems of the sparsely settled areas, are trying with some success to becloud the issue; but on the other hand it is fine to know that they are not succeeding in Virginia.

News Notes

Health Workers Hold Annual Meeting.

The annual conference of state health workers conjointly with the Virginia Public Health Association was held in Richmond on February 18th, 19th, 20th, and 21st. Most of the county health officers, public health nurses, sanitation men and many city health officers with their staffs were in attendance. General meetings were held in the community house of the Broad Street Methodist Church and sectional meetings were held at Cabaniss Hall, Medical College of Virginia and at the State Health Department.

Distinguished out of State visitors were present and participated in the discussions. Dr. W. F. Draper, Assistant Surgeon Gen-

eral of the U. S. Public Health Service, Dr. John A. Ferrell, Director for the United States for the Rockefeller Foundation, Miss Elizabeth Fox, Director of Public Health Nurses, American Red Cross, Dr. Nathan Sinai, Director National Committee on the Cost of Medical Care of the American Medical Association, and Dr. W. W. Cort, Professor in Johns Hopkins School of Hygiene and Public Health, were among these.

The first session of the conference was given over to an exhaustive discussion of Dr. M. E. Brydon's plan to sanitate Virginia in the next three years. This plan contemplates the enlistment of the housekeepers of the State in a concerted organized effort to provide the details of safe sewage disposal, safe water, screens and fly control at each home in the State. Substantial money prizes are offered to the organization in the counties that achieve the best results under this plan. Dr. Brydon, Dr. Ennion Williams and Col. Kelley explained the plan and answered the many questions submitted by the audience.

The address by Miss Fox on the Red Cross in action during the hurricane disasters in Porto Rico and Florida was most interesting. Her statement that on reports from the weather bureau the Florida disaster was anticipated and workers dispatched to the scene and warnings given twenty-four hours ahead of the storm was especially striking.

Dr. Nathan Sinai, Director of the National Committee on Cost of Medical Care, addressed the conference on his researches in this field. Mr. Frank Bane, State Welfare Commissioner of Virginia, gave an address on the recently organized psychiatric clinic work in Virginia.

Dr. C. B. Ransome, Health Officer of Roanoke, President of the Virginia Public Health Association, took as the subject of his presidential address "Syphilis the Greatest Killing Disease" and by a large statistical chart made out a very strong case against this disease.

Dr. L. T. Royster, Professor of Pediatrics, University of Virginia, gave an address on "Mortality in Infancy and Childhood" which was filled with apt and valuable suggestions to workers in the maternity and infancy field.

Dr. W. W. Cort, Professor in the School of Public Health and Hygiene, Johns Hopkins University, discussed the role ascaris plays in the morbidity among children and described the methods and results of his recent ascaris survey in Wise County, Va.

Dr. L. J. Roper, City Health Officer, Portsmouth, Va., discussed morbidity reports. Dr. W. B Foster, City Health Officer, of Richmond, addressed the meeting on health department clinics. Dr. W. A. Plecker, Director Bureau Vital Statistics, gave an interesting paper on "Rheumatism a Public Health Problem" and Dr. L. L. Williams, Surgeon, U. S. Public Health Service, showed a most instructive moving picture on malaria control. Dr. W. A. Bmrufield, Director of the Nine-County health unit centering around Farmville, described his work and what he hoped to accomplish.

Section meetings of the Tuberculosis Bureau, of the public health nurses and of the health and sanitation officers which discussed in detail the peculiar problems in the separate fields were most productive of fruitful suggestions. Dr. Dean Cole gave a lecture illustrated by a moving picture reel on "Differential Diagnosis of Early Tuberculosis". Mr. Berry, Director of Shellfish Sanitation for Virginia, presented a model ordinance for cities and towns in the control of the sanitary distribution of oysters and other shellfish. Dr. Harvey Coghill discussed practical child psychology and State Health Department staff and field workers dealt with the important details of their work.

Prizes were awarded nurses and sanitation officers for the best essays on subjects in their separate fields.

The Virginia Public Health Association elected as its officers for the ensuing year the following: President, Dr. W. Brownley Foster, Richmond; Vice-Presidents, Dr. W. H. Pott, Portsmouth and Dr. G. F. McGinnes, Richmond; Secretary-Treasurer, Dr. F. J. Wampler, Richmond.

Dr. Mosby G. Perrow, Director Public Welfare, Lynchburg, was elected as representative of the Association to the American Public Health Association.

The Tri-State Medical Association of the Carolinas and Virginia

Held a most interesting and pleasant session in Greensboro, N. C., in February, under the presidency of Dr. James K. Hall, of Richmond. Interesting clinics added much to the value of this meeting. Charleston, S. C., was selected as the 1930 place of meeting, and

the following officers were electd for the coming year: President, Dr. Cyrus Thompson, Jacksonville, N. C.; vice-presidents, Dr. W. R. Wallace, Chester, S. C., Dr. J. M. Baker, Tarboro, N. C., and Dr. Frank S. Johns, Richmond, Va. Dr. J. M. Northington, Charlotte, N. C., was unanimously re-elected secretary-treasurer and was at the same time voted an appreciation of the work he had done in this capacity and also as editor of *Southern Medicine and Surgery.*

The Virginia Tuberculosis Association

Held its annual meeting in Richmond on February the 28th. In addition to an interesting program by members, Dr. Kendall Emerson, New York, mangaging director of the National Tuberculosis Association, talked at the morning session on "Local Tuberculosis Programs". In the evening he delivered an address to the profession and the public.

At the business meeting Dr. Dean B. Cole, Richmond, was elected president of the Association for the ensuing year; Dr. H. A. Latane, Alexandria, was elected first vice-president, and Dr. Roy K. Flannagan, Richmond, secretary. Miss Leslie Combs Foster was re-elected executive secretary-treasurer.

Dates Set for State Society Meeting.

The Council held its mid-winter meeting on February the 26th, at which time October 22nd, 23rd and 24th were selected at dates for our annual meeting in Charlottesville, Va., under the presidency of Dr. J. Bolling Jones, of Petersburg. The new medical quarters at the University are to be dedicated on the first day of our meting, which fact wil add greatly to the interest of those who attend, as many notable speakers will be on hand for this occasion.

Plans are also being made to have some interesting clinics and an excellent program altogether is expected. It is not too early to begin making plans to attend this meeting. Come early and stay through the three days so as not to miss anything.

Dr. and Mrs. W. J. Wiginton,

Java. Va., have returned from a two weeks' vacation spent at Miami, Fla.

Dr. John R. Gill,

Of the class of '27, University of Virginia, Department of Medicine, is now connected with the medical staff of the East Louisiana State Hospital at Jackson, La.

South Boston Hospital.

The new addition to the South Boston Hospital, owned and operated by Dr. R. H. Fuller, was formally opened March 8, 1929. This hospital was originally opened in May, 1927, as an eighteen bed hospital. The new addition brings the hospital capacity up to forty beds. The new structure is fire-proof throughout and is supplied with the newest type of equipment. The staff has been augmented to take care of the requirements entailed by the institution's growth. Dr. W. R. Counts is Resident Physician and Miss Rose Fuller, R. N. is Superintendent.

Dr. Ward C. Curtis,

Of the class of '20, Medical College of Virginia, after sometime spent at San Angelo, Texas, has moved to El Paso, Texas, where he is associated in practice with Drs. Will P. Rogers, G. H. and Sherod Mengel, with offices at 314 Roberts Banner Building.

The Southwestern Virginia Medical Society

Is to hold its Spring meeting in Pulaski, March the 27th and 28th, under the presidency of Dr. A. M. Showalter, of Christiansburg. Invited guests for this meeting are Drs. W. H. Park, of New York City, and Dr. J. S. Horsley, Sr., Richmond. Members who will take part in the symposium are: Drs. R. A. Morison, Abingdon; K. D. Graves, Pearisburg; J. W. Preston, Roanoke; and D. S. Divers, Pulaski. Those on the program for voluntary papers are: Drs. T. J. Hughes, Frank Helvestine, L. D. Keyser, R. H. DuBose and A. P. Jones, of Roanoke; Dr. D. B. Stuart, Dublin; Dr. A. B. Grubb, Cripple Creek; and Dr. H. W. Bachman, Bistol.

Dr. Drewery Ill.

As we go to press, we learn that there has been a slight change for the better in the condition of Dr. William F. Drewry, of Petersburg, Va., who has been critically ill with double pneumonia with heart complications.

Dr. Thomas E. Hughes,

Richmond, Va., sailed early this month for England to attend the running of the grand national steeplechase at Aintree.

Registered for Post-Graduate Course:

Following is a list of doctors who have registered to attend the course of post-graduate instruction to be held by Gill Memorial Hospital of Roanoke, Va., April 8th-13th, inclusive:

Dr. C. G. Butler, Gainesville, Ga.
Dr. S. Kirkpatrick, Selma, Ala.
Dr. V. C. Dail, Knoxville, Tenn.
Dr. A. M. Walker, Tuskaloosa, Ala.
Dr. Martin Crook, Spartanburg, S. C.
Dr. Thos. W. Davis, Winston-SaSlem, N. C.
Dr. W. W. Perdue, Mobile, Ala.
Dr. E. L. Sutherland, Lynchburg, Va.
Dr. E. Vermillion, Welch, W. Va.
Dr. Wallace Gill, Richmond, Va.
Dr. L. W. Hovis, Charlotte, N. C.
Dr. Karl S. Blackwell, Richmond, Va.
Dr. Carl Bishop, Plainfield, N. J.
Dr. R. W. Petrie, Lenoir, N. C.
Dr. J. R. Perkins, Winston-Salem, N. C.
Dr J. R. Vermillion, Princeton, W. Va.
Dr. V. F. Crouch, Winston-Salem, N. C.
Dr. J. Sidney Hood, Gastonia, N. C.
Dr. E. G. Campbell, Johnson City, Tenn.
Dr. Ogg, Johnson City, Tenn.
Dr. Darrell Harvey, Providence, R. I.
Dr. J. H. Fitzgerald, Smithfield, N. C.

Summer Institute for Colored Midwives in South Carolina.

It is hoped that a permanent midwives' school will be the outcome of the institutes for colored midwives held during the summers of 1927 and 1928 at the Vorhees School for Negroes in Denmark, S. C. The institute for 1927 was held only during July, but the 1928 institute held sessions during June, July, and August, teaching three groups of thirty midwives each. It was conducted by the maternity and infancy nurses, with a local physician and a graduate colored nurse in charge. Since 1925 the maternity and infancy nurses have conducted a prenatal clinic for mothers at the hospital connected with the Vorhees School.

Dr. Margaret P. Kuyk,

Richmond, Va., was recently elected a member of the Epsilon Chapter of the Phi Beta Kappa at the University of Richmond, in which school she is Professor Emeritus in Physiology and Hygiene.

Portland Session, A. M. A.

Plans are progressing splendidly for the Portland, Ore., meeting of the American Medical Association, dates of which are July 8th to 12th, inclusive. The Portland committee of arrangements is anxious that visitors make plans to stay over after adjournment of the sessions that they may take in some of the side trips to be enjoyed in that section. Many hotel reservations have already been made and fellows who expect to attend are urged to make reservations soon as possible that they may get accommodations in hotels of their choice. The summer excursion fares from the East will be in force at time of this meeting, and many doctors and their families are expected to take advantage of this fact to attend the Portland meeting.

Those desiring to have scientific exhibits at this meeting should send applications for same to the Director of Scientific Exhibits of the American Medical Association, 535 N. Dearborn Street, Chicago, before April the 1st, in order that the amount of space available may be apportioned to the best advantage to all concerned.

Dr. Allan M. Kimbrough,

Formerly of Richmond, Va., has located in Norfolk, Va., with offices at 201 West Freemason Street, where he will limit his work to orthopedics. Dr. Kimbrough has just returned from New York where he spent two years in post-graduate study at the New York Orthopedic Dispensary and Hospital under Dr. Russell A. Hibbs.

Dr. Mark W. Peyser,

Richmond, Va., recently visited Washington, D. C., and inspected the physiotherapy departments of various hospitals with a view to the establishment of such a department at Stuart Circle Hospital, this city.

Dr. R. E. Booker,

Of Lottsburg, Va., after a visit in Florida, returned to a Richmond hospital for treatment.

Dr. J. M. Emmett,

Clifton Forge, Va., has been named by the mayor of that place as a member of the Committee in charge of the welfare work of that city for the coming year.

Victoria, Australia, Battles Against Maternal Mortality.

During the five years ending with 1927 the Victorian Bush Nursing Association of the State of Victoria, Australia, attended 2,273 confinements of white mothers without the loss of a single mother. This organization was started in 1910 for work in the rural districts of the State, and its efforts have been so successful that in 1927 the sparsely settled "bush" had the lowest maternal mortality rate in Victoria, while the city of Melbourne, which contains more than half the population of the State, had the highest. The average rate for the State was 5.58 per 1,000 live births, which contrasts favorably with the rate during the same year, 6.47, for the birth-registration area of the United States.

The successful record is attributed to the adequate training of both doctors and nurses and their excellent co-operation, insistence on continuous antenatal supervision, and properly planned, staffed, and equipped hospitals to which all complicated cases are removed at the earliest moment.

The American Association for the Study of Goiter

Is to hold its annual meeting in Dayton, Ohio, March 25th, 26th and 27th, with headquarters at the Miami Hotel. Dr. S. D. Van Meter, Denver, Col., is president, and Dr. F. B. Dorsey, Jr., Keokuk, Iowa, recording secretary. In addition to a number of interesting papers, operative clinics will be held on the morning of the 26th.

Married.

Dr. Harry Hudnall Ware, Jr., and Miss Mary Warren Williams, both of Richmond, Va., February the 16th.

Graduate Fortnight of the New York Academy of Medicine.

The New York Academy of Medicine is arranging for a second series of lectures at the Academy, co-ordinated clinics, clinical demonstrations and courses in hospitals and teaching institutions of New York, on the subject of "Functional and Nervous Problems in Medicine and Surgery". The fortnight will be held during the period October 7 to 19, 1929.

Evening sessions will be held at the Academy at which well known authorities will discuss many phases of the general subject. During the mornings and afternoons specially prepared clinical programs will be presented in a number of the leading hospitals of the city.

The profession is generally invited to attend. No fee will be charged for attendance at any of the meetings or clinics on the program.

Medical College of Virginia News.

President Edwin A. Alderman, University of Virginia, will deliver the principal address at the ninety-first commencement of the Medical College of Virginia, Richmond, on Tuesday, May 28, 1929.

The Chemical Foundation, Inc., of New York City, has made a grant to the Medical College of Virginia, Richmond, to make it possible to employ for a three year period, a full time expert to enlarge its present program of research in chemistry as related to medicine, surgery, and dentistry. The special laboratory for this work will also be considerably enlarged.

How Many School Children Have Heart Disease?

The prevalence of heart disease among the school children of this country has had little investigation. A recent examination of approximately 120,000 Boston children of school age showed that 785 had organic heart disease. Routine examination of school children in New York City indicates that seven in every 1,000 have diseased hearts—the same rate as was discovered in 1924 among children in the elementary schools of England and Wales. The Heart Committee of the New York Tuberculosis and Health Association, which recently published these figures, calls attention to the importance for such children of education beyond the elementary grades, so that they may be able to find work and amusement which will not unduly strain the heart.

Texas Studies Its Mexican Children.

A grant from the Laura Spelman Rockefeller Memorial Fund has enabled the School of Education of the University of Texas to undertake a study of the education of children of Mexican immigrants in Texas.

Dr. Phil H. Neal,

Of the Medical College of Virginia, class of '23, after several years of post-graduate work in New York City, has become associated with Dr. Stuart L. Craig, 135 East Sixty-Fifth Street, that city. His practice is limited to diseases of the ear, nose and throat.

Dr. M. B. Hiden,

Warrenton, Va., has been appointed by the local Chamber of Commerce as a member of a committee to prepare a pamphlet or book which will set forth the advantages of Warrenton and vicinity.

The American College of Physicians

Will hold its thirteenth annual clinical session in Boston, April 8th-12th, under the presidency of Dr. Charles F. Martin, Dean of the Faculty of Medicine, McGill University. Dr. John H. Musser, Professor of Medicine at Tulane University Medical School, is president-elect and will be inducted to the presidency toward the end of the Boston meeting. Dr. James H. Means, Jackson Professor of Clinical Medicine at Harvard Medical School and Chief of the Medical Service at the Massa-

chusetts General Hospital, is General Chairman of all Boston Committees.

Dr. J. Morrison Hutcheson, Richmond, is the Virginia member of the Board of Governors of the College.

The Program provides hospital visits, clinics, demonstrations and ward-walks during the forenoons at fifteen different Boston hospitals, and for general scientific sessions each afternoon and evening in the Assembly Room of the Hotel Statler, which will he headquarters.

A Symposium on Deficiencies will take place the first evening of the session. Another special feature is a review of the Present Status of Vaccine and Serum Prophylaxis and Therapy by Dr. Benjamin White, of Boston, an authority on these subjects. The annual banquet of the College will be held Thursday evening, April 11th, when Dr. George E. Vincent, President of the Rockefeller Foundation, will deliver the chief address. The Convocation, for the conferring of Fellowships, will take place Friday evening, April 12th.

Programs and details concerning reduced fares, admission, etc., may be secured from the Executive Secretary, E. R. Loveland, 133-135 S. 36th Street, Philadelphia, Pa.

Free Book for Medical Students Who Intend to Visit Hungary.

A guide book for physicians and medical students who intend to visit Hungary is being distributed gratis by the Cunard Line. It gives full information concerning the conditions under which members of the medical profession may continue their studies in Budapest, giving courses which may be taken up at the various clinics and universities. The book may be obtained by dropping a card to the Cunard Line, 25 Broadway, New York.

Dr. Edward W. Rawls,

Portsmouth, Va., has been elected a member of the Second District congressional committee.

Cardiac Conferences.

Believing in the teaching function of hospitals not located in medical teaching centers, a series of three weekly cardiac conferences were recently held at the Montgomery Clinic, Montgomery, W. Va., under the direction of Dr. Milton C. Borman.

The conferences were well attended by physicians from various parts of the county. The diagnosis and treatment of diseases of the heart muscle and cardiac valvular disease, and the recognition, importance, and treatment of the various cardiac arrhythmias were presented. Ambulatory and hospital patients were shown, and gross pathological specimens and microscopic slides of cardiac lesions were demonstrated with a projectoscope.

Dr. Andrew F. Giesen,

Recently of Brownsburg, Va., has moved to Konawa, Okla., where he is associated in general practice with Dr. W. J. Long.

Base Hospital No. 45, of the Veterans' Association,

Familiarly known as the McGuire Unit, held its annual reunion in Richmond on March the 2nd. Memorial services for all deceased members were held at the grave of Dr. E. Guy Hopkins in Hollywood Cemetery. Dr. and Mrs. Stuart McGuire entertained the members at a reception at their home in the afternoon. This was followed by a banquet at the Commonwealth Club at which time Dr. Robert C. Bryan, Richmond, was the principal speaker.

Results From Christmas Seal Sales.

It was announced at the office of the Virginia Tuberculosis Association at Richmond that the sale of tuberculosis Christmas Seals for 1928 was the largest ever held in Virginia.

The Executive Secretary, Miss Leslie C. Foster, stated that a great many of the county and city chairmen reported their sales were seriously curtailed by the epidemic of influenza which was at its height during the period when seals were being sold. Many of the volunteer workers were ill and the schools, which assist in the country districts, were closed. In spite of this handicap, the amount received to date is $64,888.70, with small amounts still coming in, and it is expected the sale will certainly reach $65,000—an increase of nearly $2,000 over the 1927 sale.

Dr. A. M. Byrd

Recently returned to his home at Northfork, W. Va., after attending a genito-urinary clinic of the U. S. Public Health Service at Hot Springs, Ark., to which place he had an appointment by the State of West Virginia. After completing his work there, Dr. Byrd visited many places of interest in the Southwestern part of the United States.

International Congress of Mental Hygiene.

Plans are already being made for the first International Congress on Mental Hygiene, to

be held in Washington, D. C., in May, 1930. It is stated that national organizations for mental hygiene have been or are being established in twenty-one countries besides the United States and Canada and that all important countries will undoubtedly be represented by such agencies at this congress. Information about the meeting may be obtained from Mr. Clifford W. Beers, secretary of the National Committee for Mental Hygiene, 370 Seventh Avenue, New York City.

Dr. Francis W. Upshur,

Richmond, Va., recently resigned as executive surgeon of the Virginia Electric and Power Company after having been connected with the surgical staff of this company for twenty-six years. Dr. Upshur is now devoting his whole time to private practice.

The American Proctologic Society

Will hold its annual meeting in Detroit, Mich, May 13th, 14th and 15th, under the presidency of Dr. Edward G. Martin, of that city. All reputable medical men will be welcomed as guests at this meeting. Dr. Walter A. Fansler, Minneapolis, Minn., is secretary.

Improved Trachoma Conditions in Kentucky.

According to a report published by the National Society for the Prevention of Blindness, increased medical facilities and widespread education on matters of hygiene throughout Kentucky have reduced the number of trachoma sufferers in that state from an estimated 50,000 persons to less than 3,000 in the last fifteen years. It is stated that the mountaineers have been taught the symptoms of trachoma and have learned thus to secure treatment for this disease in its early stages, at which time it may be cured. This great reduction in the number of cases of trachoma has apparently been instrumental in bringing about a higher standard of living.

Dr. A. L. Tynes

Has returned to his home in Staunton, Va., after several weeks spent at Coral Gables, Fla., where he went to recuperate from the effects of a severe case of influenza.

Dr. Guy R. Harrison,

Of Richmond, dental member of the Virginia State Board of Health and oral surgeon to St. Luke's and Stuart Circle Hospitals, this city, by invitation addressed the Virginia Tidewater Dental Association in Norfolk, at its meeting on February the 21st.

Dr. A. M. Showalter,

Christiansburg, Va., is one of the line grand officers of the Grand Lodge of Virginia, A. F. and A. Masons, and according to custom, was elevated one rank, at the meeting of the Grand Lodge in Richmond, the middle of February.

The American Climatological and Clinical Association

Is to hold its annual meeting at the Chamberlin-Vanderbilt Hotel, Old Point Comfort, Va., May 2, 3 and 4, 1929, under the presidency of Dr. J. Woods Price, of Saranac Lake, N. Y. Dr. Arthur K. Stone, Framingham Center, Mass., is secretary of the Association.

Dr. H. R. Farley,

Pulaski, Va., left the last of February for New York City, for the purpose of taking up post-graduate work.

Dr. and Mrs. Julian M. Robinson

Recently returned to their home in Danville, Va., after a visit to Cuba.

Dr. C. T. Carter,

Of Danville, Va., who has been visiting in Havana, is now in Florida in which place Mrs. Carter has joined him.

Dr. C. B. Bowyer,

Who has been spending part of his winter vacation in Havana, Cuba, will return to his home at Stonega, Va., shortly.

Dr. F. Thomas Amiss,

Recently of St. Charles, Va., has moved to Luray, Va., where he will continue the practice of his profession.

The Mid-Tidewater Medical Society,

Composed of the counties in the peninsula between the York and Rappahannock Rivers and also York and New Kent Counties, will hold its regular quarterly meeting at Mathews C. H., Wednesday, April the 24th. Dr. Hawes Campbell, Enfield, is president, and Dr. Malcolm H. Harris, West Point, secretary.

Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces an open competitive examination for associate medical officer and assistant medical officer, applications for same to be on file with the Commission not later than June 29th. Competitors will not be required to report for examination, but will be rated on their education, training and experience. Full information may be secured of the above named Service.

Boys' Club to Fight Juvenile Delinquency in Chicago.

The erection of twenty-five new boys' club buildings in the congested districts of Chicago is planned by the Chicago Boys' Club, in a campaign to reduce juvenile delinquency in that city. Each club building is to cost $200,000 and will contain a gymnasium, swimming pool, game rooms, playgrounds, and other equipment. It is expected that the buildings will be completed during the next five years.

Playgrounds for the Holy Land.

In 1926 a playground furnished with American equipment and under the charge of a trained director was established under the wall of the Old City of Jerusalem just within Zion Gate. Here 600 boys and girls of many races, religions, and classes are learning to play together. Mrs. Bertha Guggenheimer, who died soon after the opening of the playground, left $100,000 to be used for its maintenance and that of others to be established. A playground is planned for the new part of Jerusalem outside the walls and one for Tel Aviv, a wholly new Jewish city founded in 1910.

Dr. Toson O. Summers,

Formerly of Richmond, Va., now lieutenant commander in the U. S. Navy, sailed early this month from Norfolk, Va., for St. Thomas, the Virgin Islands, where he will be stationed for the next two years.

Wanted to Buy—

Physician's combined residence and office property in city of between five and ten thousand population. Address No. 158, care this journal. (*Adv.*)

Obituary Record

Dr. Homer Silon Henkel,

Staunton, Va., died in Baltimore, Md., February the 12th, after a lingering illness with heart disease. Dr. Henkel was born in Staunton, forty-three years ago and, after attending school at the Staunton Military Academy, studied medicine at the Medical College of Virginia, from which he graduated in 1914. He practiced for six years at Brownsburg after which he took a post-graduate course in New York. On hs return, he located in Staunton and he and Dr. G. R. Fisher formed a partnership and limited their work to diseases of the eye, ear, nose and throat. He was a member of the Medical Society of Virginia. His wife and a daughter survive him.

Dr. Lyndsay Wolford Newland,

Of Splashdam, Va., member of the Medical Society of Virginia, died December the 24th, after a short illness with pneumona. He was forty-one years of age and was graduated in medicine from Lincoln (Nebr.) Medical College in 1911. Dr. Newland served throughout the World War. At the time of his death he was secretary-treasurer of the Dickenson-Buchanan County Medical Society.

Dr. John J. Nelson, Sr.,

Columbia, Va., died at his home in that place on February the 15th, after an illness of several years. He studied medicine at the University of Virginia, from which he received his diploma in medicine in 1876. He had practiced in the section around Columbia for forty-five years. He is survived by his wife and several children, one of them being Dr. J. J. Nelson, Jr., also of Columbia.

Dr. Paul Clenton Brittle,

Burlington, N. C., died at a local hospital, January the 29th, following an emergency operation. He was forty-nine years of age and had graduated in medicine from the former University College of Medicine, Richmond, Va., in 1907. He was a member of the Medical Society of the State of North Carolina.

Dr. William Thomas Williamson,

For the past eight years in charge of the department of medicine and cardovascular diseases of the Richmond (Va.) office of the U. S. Veterans' Bureau, died February the 17th, death being due to pneumonia. Dr. Williamson was sixty-four years of age and a graduate of the University of Louisville, School of Medicine, in 1886. His wife and several children survive him.

Professor Clemens von Pirquet.

Announcement has been made of the death, early this month, of Professor von Pirquet, renowned Austrian pediatrist, aged fifty-four years. He was the inventor of the serum skin test for tuberculosis.

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